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STEEL

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For forty-eight years—IRON TRADE REVIEW

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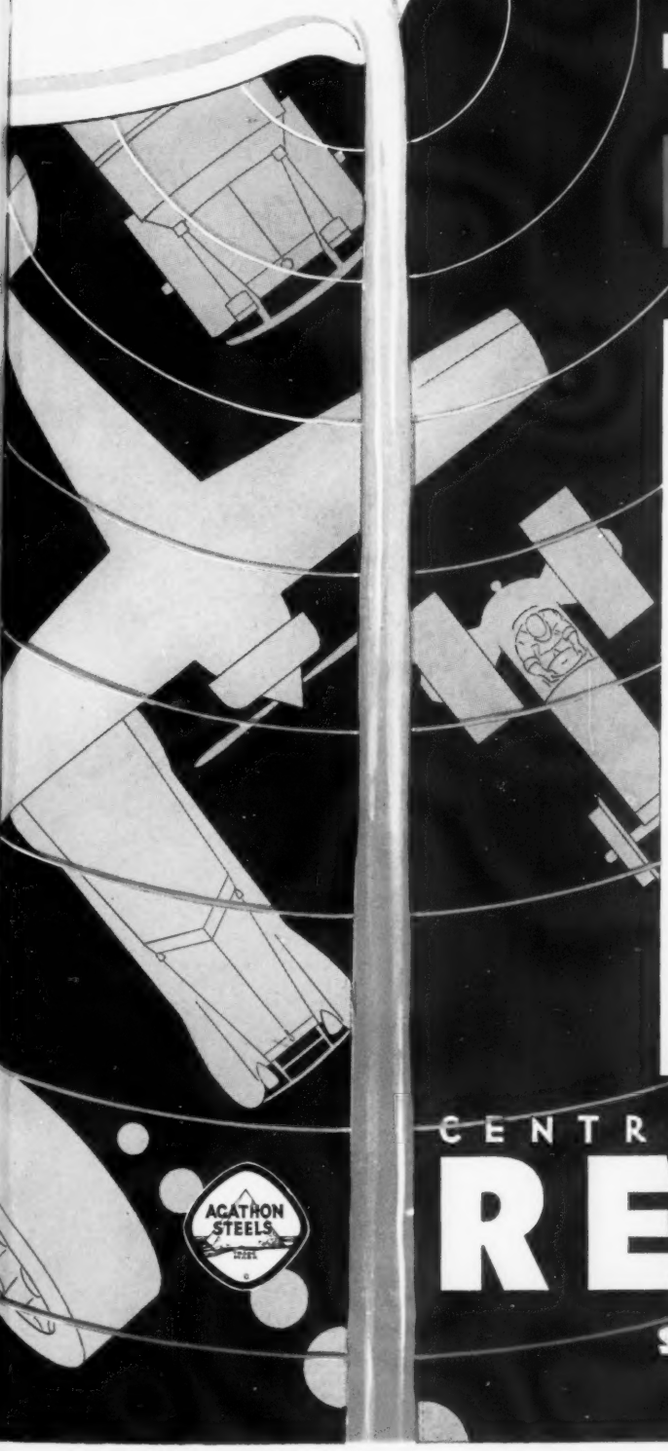

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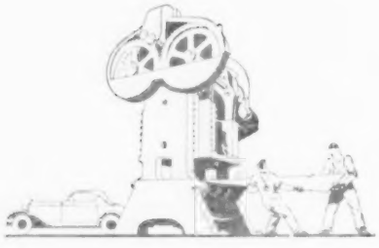

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CONTENTS

July 25, 1932

THE WEEK IN PERSPECTIVE 9

What Improvement on Farms Will Mean to Industry 11
Business News from Washington 12
Revenue and Empire Loyalty Complicate Canadian Steel 13
Personals 14
Obituary 15
Mirrors of Motordom 16
Here and There in Industry 17

EDITORIAL—Will Agriculture Lead the Way Out? 18
THE BUSINESS TREND 19

Producing Steels and Alloys in Coreless Induction Furnaces 23
Steel Sheet Piling in Good Conditon after 19 Years 26
Rivet-Bolt Shows High Strength 28
Builds Device for Studying Corrosion of Welds 30
Large Uses of Steel in Small Ways—Pipe Vises 32
To Weld Plates for Dam in Field 32
Making the Most of Methods and Materials 33
Progress in Steelmaking 35
New Books Worth Reading 36
New Equipment 39

MARKET REPORTS AND PRICES 41-56
CONSTRUCTION AND ENTERPRISE 57
WHERE-TO-BUY DEPARTMENT 61
ADVERTISERS' INDEX 74

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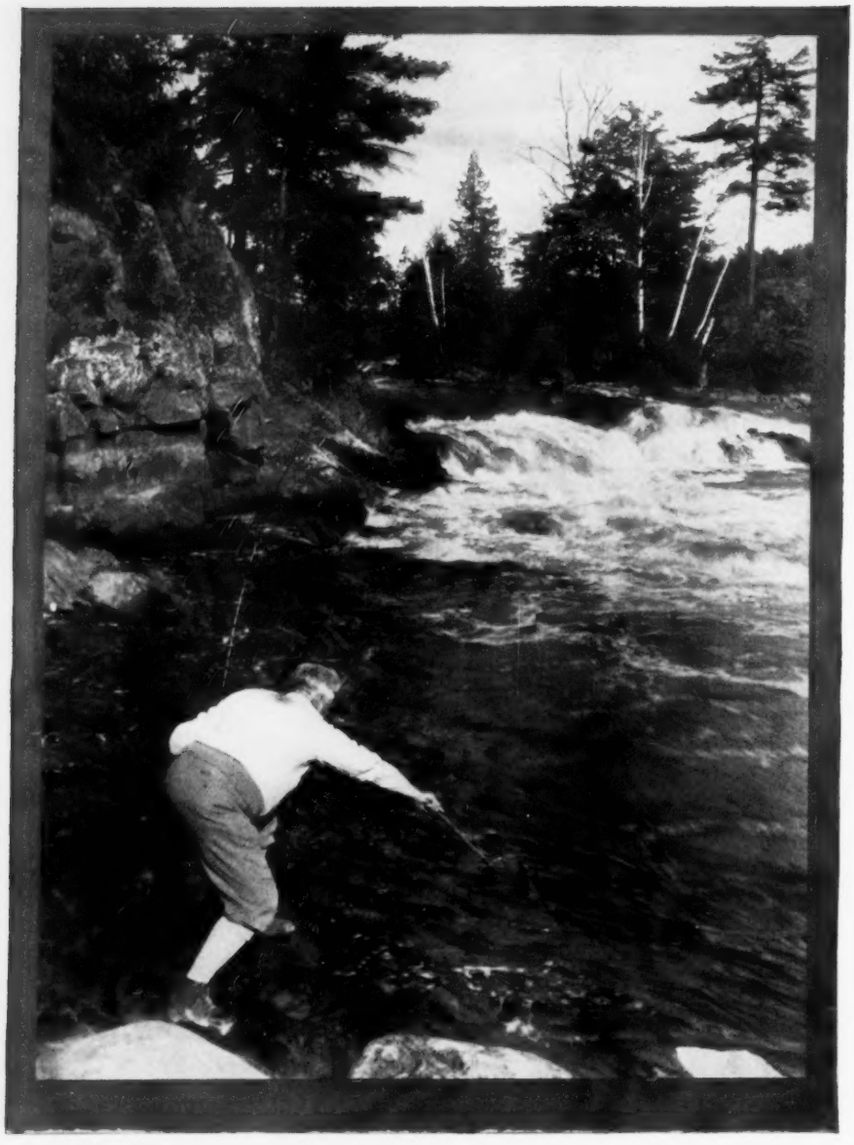

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Volume 91 Number 4

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

TO PARAPHRASE an old political maxim, as goes agriculture so goes industry. Plotting an index of the marketing of agricultural products against the trend of industrial production discloses (p. 11) how unfailingly the former has forerun the latter. The recovery from 1921, the slight unsettlement in 1924, the approach to the peak of 1929 and the depression that ensued, all were foretold with uncanny accuracy. And now this barometer is rising!

Rising Prices and Output—Happy Coincidence

Long experience shows that the early months of the year normally are the lean ones in marketing, while for seasonal reasons farm products come on with a rush beginning in September. This year there is some improvement even in the colorless months. Since 1927 the trend of farm product prices has been downward in the closing quarter, but this year agriculture is approaching its lush period with prices on the rise.

Transmuting Farm Products Into Steel

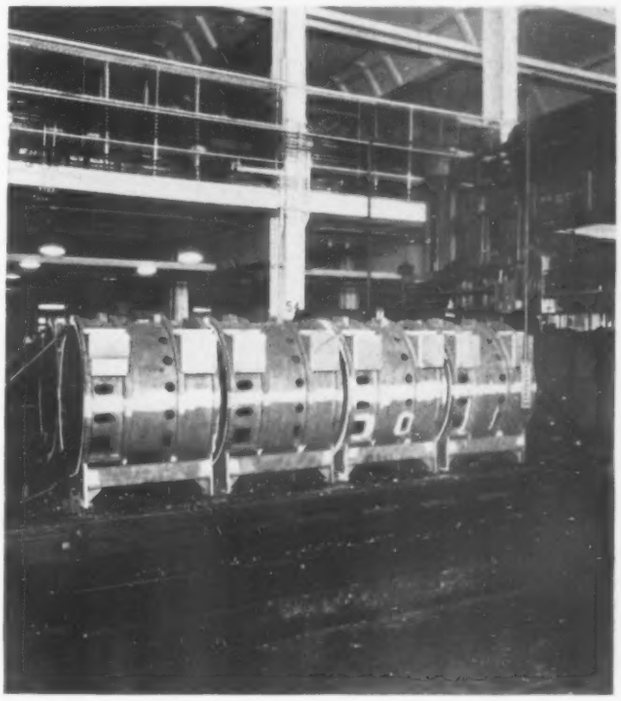
For steel this is a harbinger of tonnage (p. 12). It promises not only to free the farmer from his bog of debts, unpaid taxes and defaults on credit purchases but also to generate fresh buying power. Steel must benefit from restored vigor in an industry that supports 30,000,000 persons, pays one-fifth of the cost of government, supplies one-eighth of railroad traffic, originates one-half of exports, provides one-sixth of the national income.

All-Steel Car Threatens Price War

From a radical new design in the low price automobile field steel also derives some encouragement. Directed to design a low price, light weight, exceptionally powerful and safe car, Hudson-Essex engineers turned to steel (p. 16). One result is a practically all-steel body on the new Essex terraplane. . . . Priced at $550, Detroit, the new Essex is $40 lower than the Ford eight, only $10 higher than the Ford four. Already, at Detroit, Chevrolet has met this price. A price war to enliven a dull summer is one prospect. Excepting Essex and Chevrolet, automobile production is slipping fast, and material and parts suppliers are bracing themselves against further pressure on prices.

Bridge Present Vacuum With Hope

Even this threat holds no terror for steel producers (p. 41), who are gaining confidence in the long pull, bridging with hope the present vacuum in demand and banking upon September to bring some measure of recovery. . . . More from resumption of mills closed since



Interchangeable motors are assured by mounting frames on the planer table to conform to the template bolted to the table. Four twin motor frames, being planed by Westinghouse Electric & Mfg. Co., are shown above

July 4 than to any actual expansion in demand, steel production (p. 49) gained one point last week to 16½ per cent.

Canada To Look East or South?

The deep scarlet that brightened the opening of the Imperial Economic conference at Ottawa typified the might of the Empire, but it may only mean a deeper red on the books of American steel producers (p. 13). A certain outcome is the diversion of more Canadian needs to British mills even if the dominion's tariff revenues suffer a little. . . . The American industry cannot be accused of any strong nationalistic tendency; none of the 500 bills passed at the last session of congress (p. 12) originated with it. . . . More important to steel is the federal blessing upon a 4-system consolidation of eastern railroads (p. 12), which may realign reciprocal business in rails and traffic.

Water Line Is Danger Line for Piling

Reproducing in a short time the normal deterioration of years is the demand made upon a special machine to determine causes of corrosion of welds in structures fabricated from special corrosion-resistant steel (p. 30). Automatically this machine subjects a test specimen to the predetermined action of a corroding liquid. . . . Nature was left to its normal processes in the case of low carbon steel piling recently pulled at Pittsburgh from its bed of mud and gravel (p. 26). Just above and below the water line proved to be the vulnerable belt, the loss here in weight being 14.9 per cent in 19 years.

Steel and Water To Battle

Not corrosion but the scouring action of silt-laden water will be the trial of the 12,000 feet of outlet pipe for the Hoover dam project (p. 32), to be fabricated at a special plant at the site. Plates will measure 12 x 35 feet, weigh 25 tons, three will make one 12-foot section of 30-foot diameter pipe. . . . In the marine field noncorrosive steel is being used increasingly not only in making repairs but also in original construction (p. 33). Unusual freedom from pipes, seams, blisters and other defects is required; iron-free abrasives must be used in grinding out any imperfections.

Solving the Problems of Furnaces

Electric induction furnaces are finding wider use in the steel and alloy castings industries because they reproduce analysis and structure of the metal and reclaim scrap, especially chromium-bearing scrap, with low loss (p. 23). Flexibility is one merit. . . . Retaining the heat in open-hearth furnace bottoms when the furnaces are idle is accomplished (p. 35) by one interest by applying a coat of tar. . . . Novel features of continuous pair and pack heating furnaces being installed (p. 35) at Pittsburgh are: Three conveyors independently actuated by hydraulic power, and over and under-firing with coke oven gas with a smoky atmosphere to prevent scaling.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

To the Editor:

Your issue of July 11 features in rather sensational language the matter of imports of steel into this country following out the brief of the National Association of Flat Rolled Steel Manufacturers which seeks to give congress and the general public the impression that the deplorable unemployment in the steel industry today is due to foreign imports.

I have carefully studied the statistics of exports and imports in recent months and find that the picture you give and the statement given out by the National Association of Flat Rolled Steel Manufacturers, hardly warrants any such picture.

And I submit that for the steel industry to seek to cripple our export trade in many lines of industry, including those using steel, on the basis of the fallacy that the dreadful situation in the steel industry today is due to the tiny stream of imports representing less than 2 per cent of the trouble would be a national calamity.

And while it would particularly injure automobile, oil burner, radio, electrical, and other industries which are exporting on a considerable scale, it would certainly ultimately injure the steel industry itself.

FRANKLIN JOHNSTON, Publisher
American Exporter, New York.

To the Editor:

The item on sponge iron under the subject of "Progress in Steelmaking" in your issue of July 11 has come to my attention. Evidently the experiment described is an extension of the direct reduction process presented at the Chicago meeting of American Institute of Mining and Metallurgical Engineers about two years ago, and at the subsequent meetings. At those meetings no blast furnace man was convinced that the proposed process was of practical value to the blast furnace process.

The lure of the "direct reduction process" and the fascinations of sponge iron have led many men to spend much time and money in searching for the right methods; some day, some one will find the way.

Now that blast furnace men have learned how to run their blast furnaces intermittently, perhaps they can learn how to control the percentages of carbon in the pig iron; the direct reduction men seem to keep the carbon at very low percentages, and also prevent most of the other elements (excepting sulphur) from combining with the iron sponge.

My object in writing to you is to correct the impression that a process in which "the reduction of the iron oxides is 100 per cent," before the material is put into the blast furnace, can be "of direct assistance to blast furnace men." Perhaps the briquettes of sponge iron mixed with gangue and containing 1.8 per cent of carbon could be used in open-hearth furnaces; that is for the open-hearth men to decide.

BLAST FURNACE MAN,
Ohio Valley.

What Improvement on Farms Will Mean to Industry

IN CONTEMPLATING the sources of support for recovery of the iron, steel and manufacturing industries one cannot afford to overlook the influence of agriculture. The condition of American farms is closely related to that of American industry.

To realize this it is necessary only to recall that

About 30,000,000 persons or nearly 25 per cent of the total population live on farms;

Industries giving employment to over half of the nations industrial workers depend upon materials supplied by agriculture*;

The farm industries pay indirectly at least $2,500,000,000 of the wages of urban employes;

One-eighth of the freight carried by railroads consists of farm products;

Agricultural products constitute nearly half the value of American exports;

One-fifth of the cost of government is paid by farmers in taxes;

Farm property represents nearly one-fifth of the national wealth; and

One-sixth of the national income is contributed by the farming industry.

An equally striking demonstration of the dependence of industry upon agriculture is furnished by the accompanying chart. Marketings of agricultural products (crops and livestock) are plotted against industrial production. It is significant that every major turn in industrial production has been preceded by a similar turn in farm marketings. Is this not convincing evidence that activity in agricultural products is a necessary prelude to industrial prosperity?

Farm Pocketbook Is Important

No less eminent a spokesman for industry than Owen D. Young recognized this dependency when, in addressing the graduating class of Notre Dame university, he said:

"We made it possible, temporarily, for the farmer to buy radios and automobiles, not through increased current earnings, but by mortgaging his future. That in turn speeded up industrial production, increased the fervor of our extravagance and encouraged our speculation.

"But the day came when the farmer ultimately had to settle. Then he stopped buying, industrial production decreased, unemployment began and we started the downward spiral which resulted in the avalanche which is now in progress.

"Industrial standards cannot be permanently restored unless we find a way of bringing agricultural standards permanently to an approximate level."

What is the real farm situation today and what is necessary to restore the farmers' purchasing power?

Arthur M. Hyde, secretary of agriculture, recently summarized present farm difficulties as follows*:

1. The farmers' purchasing power is half what it was in the fairly normal prewar years, 1910-14.
2. Farm land values are below prewar levels.
3. Taxes on farm property are two and a half times as high.
4. The total farm debt is almost three times as high.
5. Forced sales of farms are dangerously high.

Without going into details as to remedies for this situation, it may be stated broadly that two correctives are essential. The first and most urgently needed aid is a rise in farm prices and an accompanying increase in the volume of farm products marketed. The second need is better adjustment of farm resources and facilities to the requirements of the nation.

At the moment the outlook for higher prices for farm products is encouraging. Quotations for several important agricultural products have advanced for seven consecutive weeks. Within the past two weeks price increases have occurred in beef, hogs, poultry, corn, lard, butter, eggs, potatoes, sugar, wool, hides, lumber and linseed oil. It is estimated that the advances in agricultural products since early June have added three-quarters of a billion dollars to the buying power of the farm population.

Heavy Marketing Month Ahead

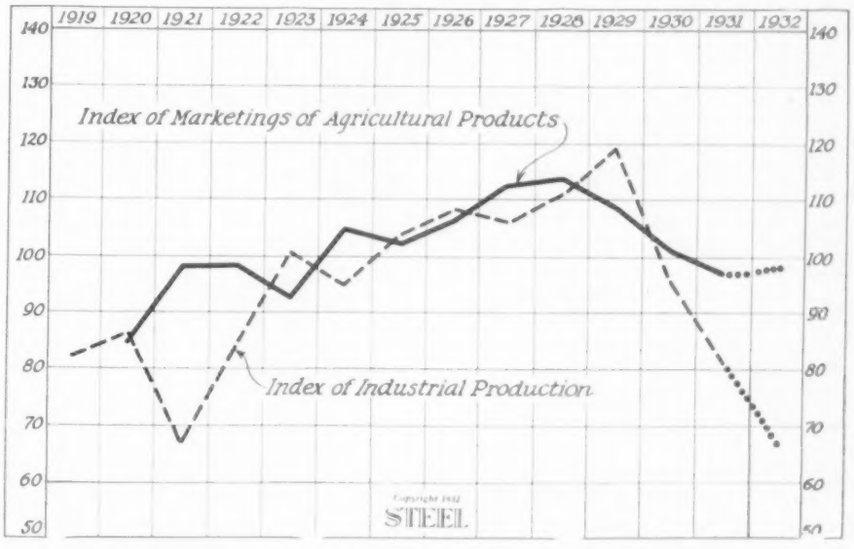
What of the volume of sales of farm products? It is well to remember that the agricultural markets fluctuate sharply throughout the year. In a normal year of 100 in the index of farm marketings the trend through the months is as follows:

January	93	July	67
February	70	August	99
March	68	September	155
April	53	October	190
May	57	November	157
June	57	December	134
Av., first half	66	Av., last half	134

Note that marketings normally are more than twice as heavy in the last half as in the first half of the year. The last four months of the year are more important than the first eight combined. In the years 1928, 1929, 1930 and 1931 farmers approached the period of heavy fall marketing with the discouraging accompani-

*From "The Farm Epic," *New York Times Magazine*, July 17, 1932.

*This and six subsequent paragraphs from information issued by the National Industrial Conference board.



AGRICULTURAL ACTIVITY PRECEDES INDUSTRIAL ACTIVITY

ECONOMIC importance of agriculture to industry is clearly shown in the above chart in which the index of marketings of agricultural products (Department of Commerce) is plotted against the index of industrial production (Federal Reserve board). Monthly averages for each year are used. Averages for 1923, 1924 and 1925 = 100. Note that the four major changes in trend in industrial production were anticipated or forecast a year in advance by changes in farm marketings. The dotted lines for 1932 represent the trends as indicated by the index numbers for the first five months. They indicate an upturn from 1931 to 1932 in farm marketings, which, on the basis of past experience, presages a subsequent upturn from 1932 to 1933 in industrial production.

ment of falling prices. Today, for the first time since 1927 they face the marketing season with the promise of ascending prices.

As for the adjustments necessary to restore agriculture to a sounder basis, the outlook is not as hopeless as generally stated. The present wave of public resentment against government extravagance will bring taxes to lower levels. The matter of land values, which probably is no worse in the case of farms than in real estate in many cities, will right itself gradually. Reversal of the flow of farm population to the cities, which has occurred during the past two years, already has had a beneficial influence on land values in certain sections.

But the most important problem of adjustment is that of synchronizing farm output with world requirements. This must take into account the effects of the change in role of the United States from a debtor to a creditor status. The proportion of domestic and export consumption may have to be revamped. Some cultivated acreage should be transformed to forest land. New fertile land should be put into use.

Mechanization Will Increase

Every competent farm authority has different ideas as to the method of adjustment, but practically all agree that further mechanization of farms is essential. Already 5,035,000 of the 25,814,103 motor vehicles registered in the United States are on farms. If the 3,466,303 motor trucks registered, 900,385 or 26.6 per cent are on farms. Farm tractors number 920,395 and farm telephones 2,139,194.

As recently as 1925, animals furnished 60 per cent of the power used on farms; the latest figures indicate that now electricity and gasoline engines furnish 52 per cent of the power. In each of several states three thousand or more farms were supplied with electricity for the first time in 1931, a depression year. The rise in the use of farm mechanical equipment was detailed in an article and chart appearing on page 15 of the Nov. 9, 1931 issue of STEEL.

With the prospect of early improvement in farm conditions brighter and with a ray of hope for needed long-time adjustments appearing, what will be the effect on industry?

Agriculture takes directly and in farm implements about 4 per cent of the country's output of finished rolled steel. If to this is added one-fifth of the steel for all buildings, one-eighth of that for railroads, one-fifth for automobiles and appropriate fractions of steel for electrical equipment, containers, highways and bridges, etc., one arrives at a figure of 15 to 18 per cent as the proportion of total consumption of finished rolled steel dependent upon the influence of agriculture. On the basis of per capita consumption, the figure would be 24 per cent, but this assumes identical consumption by rural and urban inhabitants, which is unreasonable. Probably one-sixth is a fair estimate of agriculture's share in steel production.

One-sixth of the nation's deficiency in steel consumption that has accumulated in 1930, 1931 and thus far in 1932. (See page 11, May 30, 1932, issue of STEEL) amounts to more than 9,000,000 tons of steel ingots and castings. Rising prices of farm commodities, greater volume of marketings and gradual adjustment of farm conditions now in progress or in sight offer hope for the first time in years that part of this pentup deficiency in consumption of steel by the farm population will be made up soon.

The Business Week In Washington

EXACTLY 500 bills were passed by congress at the session which terminated July 16, out of 13,000 introduced in the house and 5000 in the senate, but none directly bore upon the iron and steel industry.

Such general legislation as the emergency relief bill, the home loan bill, the economy bill and the new revenue measure has, of course, a decided incidence upon the industry. Probably the greatest effort put forth by the industry was in the closing hours, to obtain a stipulation that only domestic steel will be used in projects publicly financed.

This attempt was fruitless more because of the late hour than because of outright opposition. It is generally believed, however, that all of the publicity given to this matter will make it much easier for American manufacturers to get this business.

It has been pointed out that the home loan bill will probably mean the construction of more private houses and this will indirectly help steel producers, especially if some of the new homes should be of the steel type now being pushed. The tonnage of steel required for self-liquidating projects which will be financed through the Reconstruction Finance Corp. is estimated from several hundred thousand upward.

The brief presented by the National Association of Flat Rolled Steel Manufacturers asking an embargo on dumping has been forwarded by many members of congress to the tariff commission and the customs bureau of the treasury. The brief has the tendency to back up the protests of the American Iron and Steel institute against dumping, several investigations being now under way.

During the closing hours of congress the customs bureau issued its new decision that after July 14 imported reinforcing bars must be marked with the country of origin.

□ □ □

June showed an unfavorable balance of trade, with imports exceeding exports for the first time since August, 1931. This was partly due to the rush to get some commodities into the country before the imposition of higher duties.

□ □ □

On adjourning, congress left 12 investigations to be made by committees of both houses.

□ □ □

Interstate commerce commission's approval of consolidation of eastern railroads into four systems—New York Central, Pennsylvania, Baltimore & Ohio and Chesapeake & Ohio-Nickel Plate—is not expected to have any immediate repercussion upon the iron and steel industry.

Actual consolidation probably will not be accomplished for some time. Eventually, the strengthening of the position of the carriers may be reflected in purchasing of equipment. When the four systems are in effect there probably will be some reshuffling of business, both for rails and for freight, now placed on a reciprocity basis.

□ □ □

The 52,572 patents granted in the year ended June 30 set a new high record.

□ □ □

Japan has temporarily postponed the effective date of an increase in the duty on automobile parts to 35 per cent.

□ □ □

Ohio Steel Foundry Co., Lima, O., has been granted a refund of $135,672 for overassessment of income and profits taxes for 1918.

Plans Container Station

Pennsylvania railroad is planning to build a station near Harrisburg, Pa., for the handling of less-than-carload shipments of freight in portable steel containers. The station will have a capacity of handling 1200 to 1500 containers a day and will have two overhead cranes each 900 feet in length which can be operated over a spread of seven tracks for use in lifting the containers from one car to another.

Reaffirms Duluth Rates

Washington — Interstate commerce commission has reaffirmed a finding concerning carload rate on iron and

steel articles from Duluth and Steelton to destinations in nearby states, dismissing the complaint against these rates.

Fall Meeting of Iron and Steel Institute Off

New York—American Iron and Steel institute has eliminated the fall meeting schedule for October. This is in line with the policy of many other large business and technical organizations.

The first general meeting of the institute was held in New York, Oct. 14, 1910, with subsequent meetings in Buffalo, Chicago, Pittsburgh and Washington. No general meetings were held in 1911 but beginning with 1912 and continuing since, with the exception of the fall meeting of 1918, two general meetings have been held each year.

Something on the broader scope of the institute may develop at the next meeting of directors, Aug. 18.

Wrought Iron Co. Will Continue in Operation

Philadelphia—Properties of the Wrought Iron Co. of America at Lebanon, Scranton and Duncannon, Pa., recently sold at auction, will continue to be operated by the Lebanon County Trust Co. as receivers.

The properties were sold by the Pennsylvania Co. for Insurance on Lives and Granting Annuities, representing mortgage holders, to Charles Lineaweaver for $58,000. Mr. Lineaweaver is chairman of the bondholders committee and a vice president of the Pennsylvania company. The Lebanon properties went at $35,000; Scranton, $10,000; and Duncannon, $13,000.

Credit Is Real Need—Weir

"What we need is a reasonable extension of credit, for business in this country is conducted on credit. If producer and consumer could secure these credits, business would show a real and sound improvement," said Ernest T. Weir, chairman, National Steel Corp., Pittsburgh, recently.

"I believe that with the improved outlook there will be an easing tendency in credit purely from a standpoint of good business."

Machine Plant Is Busy

Davis & Thompson Co., Milwaukee, manufacturing special milling machines and other high production tools, reports excellent business, chiefly from Detroit automobile plants, requiring a day and night force of 75, according to Frank M. Davis, president.

Revenue and Empire Loyalty Complicate Canadian Steel

TORONTO, Ont.—American iron and steel manufacturers doing an export business with Canada appear certain not to gain and very likely to lose as a result of the discussions of inter-empire trade at the Imperial Economic conference, which convened at Ottawa, July 21.

An agreement was reached between representatives of the Canadian and English iron and steel industry meeting at Montreal, July 4-13. This agreement, it is understood, is to be kept secret for the time being, but it appears to be contingent upon a general policy adopted at the Ottawa conference.

Will Protect Own Mills

Stripped of nonessentials, Canadian and English manufacturers are agreed upon the merits of reciprocal trading. Canada is disposed to protect the products of her own iron and steel plants from competition from England as well as from the United States.

On products not made in large volume in Canada but consumed there on a large scale, the matter of revenue from the Canadian tariff is a stumbling block. Canada concedes the principle of taking as large a proportion as possible of these products from England, but to what extent should loyalty to the empire offset possible revenue on imports, principally those received from the United States?

In the year ended March 31, 1932, imports of iron and steel products by Canada from the United States were valued at about $170,000,000, on which the duty accruing to the dominion was about $32,000,000. In the same period, the duty on imports from England was only $1,300,000.

At the same time, the duty and exchange present a problem for Canadian consumers, to whom the interest in revenue for the government is indirect. On pig iron bought in Toronto from a Buffalo furnace, the price of $17 at the furnace is only a start, as duty and freight of $5.90 plus exchange at 15 per cent brings the price up to $25.45, laid down in Toronto.

Steel Corp. Has Big Stake

In response to the higher duty imposed upon imports of iron and steel a year ago, a number of American manufacturers of steel products opened plants in Canada, and to stimulate inter-empire trade without prejudice to these plants, which employ Canadian labor, is a complication. The United States Steel Corp., with a bridge fabricating works and wire and tin plate mill just across from Detroit has the largest stake in Canada.

In general, it is estimated that Canada takes about 40 per cent of the iron and steel exports of the United States. In the first five months of 1932 exports totaled 269,674 gross tons, of which the proportion going to Canada would be about 108,000 tons. Following is a compilation, from department of commerce statistics, of principal exports to Canada in May and the five months ended with May:

	May	Five Months ending May
Plates, other than boilers, not fabricated, lbs.	1,045,486	6,233,514
Galvanized sheets, lbs.	213,534	784,066
Black sheets, lbs.	9,428,350	33,053,687
Tin and terne plate, lbs.	112,192	1,172,694
Welded black pipe, lbs.	161,304	802,947
Barbed wire, lbs.	1,105	1,305
Trucks and buses, No.	54	204
Passenger cars and chassis, No.	79	697

Financial News of Steel Industry

A. M. Byers & Co., Pittsburgh, reports second quarter net loss of $211,083, compared with a net loss of $229,138 in the preceding quarter and a net profit of $3766 equal to 6 cents a share on the preferred stock in the second quarter of 1931.

□ □ □

Harbison-Walker Refractories Co., Pittsburgh, reports estimated net loss of $140,500 for the second quarter after all charges. This indicates a net loss for the first half of $120,300.

□ □ □

McKeesport Tin Plate Co., McKeesport, Pa., reports a net profit of $668,151 for the first half, equal to $2.23 a share. This compares with earnings of $4.23 or $1,270,722 for the first half of 1931.

Is Draining Ore Mine

Birmingham, Ala.—Sloss-Sheffield Steel & Iron Co. is improving water drainage at one of its larger iron ore mines on Red Mountain. It has one of four blast furnaces in Birmingham in blast.

Industrial Men in the Day's News

Edward R. Williams, President, Vulcan Mold & Iron Co.

—*Frank Moore Photo*

IN his new post he succeeds his father, veteran of the industry and recent victim of an automobile accident.

SINCE the founding of the Vulcan company in 1923 he has been associated with it, being vice president recently.

SEVERAL processes for the manufacture of ingot molds have been patented by him.

EDWARD R. WIILIAMS, for several years vice president of the Vulcan Mold & Iron Co., Latrobe, Pa., has been elected president and a director of the company to succeed his father, Col. Edward H. Williams who was killed in an automobile accident near Latrobe, July 7.

The post of vice president will be left vacant for the present. H. H. Smith is secretary and treasurer, and the board of directors is composed of M. W. Saxman, C. M. Semler, G. E. Anderson, Fred B. McFeely, Roy C. McKenna and Messrs. Williams and Smith.

Mr. Williams was associated with his late father in the conduct of the Vulcan company since its inception in 1923, having previously obtained his experience in the steel and mold business with the Youngstown Sheet & Tube Co., Youngstown, O., and the Valley Mold & Iron Co. at Sharon, Pa. He was graduated in 1921 from the Sheffield Scientific School of Yale university, during the war having been enrolled in the officers training corps there.

After going to Latrobe, when the Vulcan plant was first started, Mr. Williams first received training under his father in the manufacturing end of the business, in later years being closely associated with Colonel Williams in the executive and sales work of the company.

In addition to membership in local organizations, he is a member of the Yale Club of New York, the Yale Engineering association, the American Society for Steel Treating and the American Institute of Mining and Metallurgical Engineers. Mr. Williams during the past few years received several basic patents on processes relating to the manufacture of iron and ingot molds.

ROBERT K. PLUMMER, formerly assistant sales manager of Gears & Forgings Inc., Cleveland, has joined the sales staff of the Perkins Machine & Gear Co., Springfield, Mass., to represent that company in the Cleveland and Chicago territories. Prior to his affiliation with Gears & Forgings, Mr. Plummer was sales manager of the Ganschow Co., Chicaco, and has also had ten years of engineering purchasing activity.

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Herbert P. Ladds, manager of sales since Jan. 1, 1930, for the Lamson & Sessions Co., Cleveland, was made vice president and general manager of the Lamson & Sessions Bolt Co., Birmingham, Ala., a wholly owned subsidiary of the company, beginning July 25.

Mr. Ladds formerly was associated with the Lake Erie Bolt & Nut Co., Cleveland, and the Maryland Bolt Co., Baltimore.

Mr. Ladds succeeds F. H. Mohns, who is retiring as vice president and general manager of the Birmingham plant.

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Wirt S. Scott, special representative of the Westinghouse Electric & Mfg. Co., Mansfield, O., for the past 20 years specializing in electrical heating work, was recently awarded the professional degree of electrical engineering by Ohio State university, Columbus.

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Alfred C. Howard, manager of the E. & T. Fairbanks Co. scale works at East Moline, Ill., a subsidiary factory of Fairbanks, Morse & Co., has been appointed assistant to A. E. Ashcraft, recently made vice president in charge of all manufacturing of the parent company after a long career as manager of the Fairbanks scale works at St. Johnsbury, Vt. Mr. Ashcraft will make his headquarters at Beloit, Wis., where the main works of Fairbanks-Morse are situated. Mr. Howard assumes his new duties at Beloit, on Aug. 1.

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G. L. Harman, until recently sales manager of the Industrial Brownhoist Corp., Cleveland, has been appointed general sales manager of the Keystone Driller Co., Beaver Falls, Pa. A native of Bay City, Mich., and a graduate of the University of Michigan, Mr. Harman was sales manager of the Industrial Works, at Bay City from 1914 until its merger with the Brown Hoisting Machinery Co.

Lynn H. Ransom, a native of Beaver Falls, graduate of Cornell

university and since 1926 in the engineering department of the Keystone company, has been appointed chief engineer of the company.

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Stanley G. Flagg, of Stanley G. Flagg & Co., Philadelphia, malleable iron workers, sailed from New York July 19 for several weeks abroad.

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E. C. Brandt, assistant works manager, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been appointed manager of renewal parts in all Westinghouse plants.

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Charles C. Cluff, who recently retired as New York district sales manager for the Carnegie Steel Co., Illinois Steel Co., and the Tennessee Coal, Iron & Railroad Co., has established an office at Room 1001, 165 Broadway, New York.

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Ed C. Oliver, formerly with machine tool department of Huey-Philp Hardware Co., Dallas, Tex., has been appointed Texas representative for Biggs Boiler Works Co., Akron, O., with headquarters at Dallas. He was connected with the Huey-Philp Co. 30 years.

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E. J. Molineaux, United States Steel Products Co., New York, has been appointed a member of a committee to study and expedite the solution of various problems confronting the American Manufacturers' Export association in foreign trade problems.

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Carl M. Kaltwasser has been elected president and general manager of the newly-organized Watson Mfg. Co., which has taken over the Watson Metal Specialty Co. business in Jamestown, N. Y. William W. Watson was made secretary and treasurer.

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V. S. Veenman has been made foundry superintendent for the France Foundry & Machine Co., Toledo, O., in charge of jobbing and production bronze and aluminum castings. Mr. Veenman formerly was foundry foreman for the Superior Bronze & Aluminum Co., Warren, O.

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R. F. Wise, formerly with Sheffield Steel Corp., Kansas City, Mo., has been appointed plant superintendent, Tulsa Steel Co. Inc., Sand Springs, Okla. William Hamil, previously with Tulsa Rolling Mills Inc., is chief engineer. W. C. McCarthy, formerly with Black Steel & Wire Co., Kansas City, has been made purchasing agent.

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Ray A. Lackner, formerly vice president in charge of sales for the Neely Bolt & Nut Co., has been appointed Pittsburgh branch manager for the E. F. Hauserman Co., Cleveland, manufacturer of movable steel partitions. A complete planning, engineering and erection service will be maintained, the temporary address being 5724 Bartlett street, Pittsburgh.

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Wiliam Monroe White, manager of the steam turbine department, Allis-Chalmers Mfg. Co., Milwaukee, has sailed from New York to spend the summer motoring through Europe. He will return in October.

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George F. Benson, former president, Monongahela National bank, Pittsburgh, formerly treasurer, National Tube Co. and vice president of the Union Trust Co., Pittsburgh, ahs been named treasurer of the Youngstown Sheet & Tube Co., Youngstown, O. He succeeds Walter E. Meub, who was secretary-treasurer until recently elected vice president in charge of the company's finances.

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Frederick W. Ells, formerly president and chief engineer, Northwestern Mfg. Co., Milwaukee, recently discontinued, has taken over representation of the Consulting Engineering Co., Pittsburgh, with headquarters in Milwaukee. Under Mr. Ells' direction a wide variety of combustion controls still is being manufactured in Milwaukee for the Pittsburgh company, which until recently was sales representative of the Northwestern company.

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H. S. Schroeder, western manager of sales at Chicago for Republic Steel Corp., has resigned. For seven years prior to the purchase of the Interstate Iron & Steel Co. by the Republic corporation he was vice president and general sales manager of that company.

Norman W. Foy has been appointed successor to Mr. Schroeder. Becoming associated with the old Republic Iron & Steel Co. in 1919, he was manager of the Buffalo, Boston and Birmingham, Ala., offices, latterly being assistant western manager of sales.

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R. F. Baldwin, who has represented Irving Iron Works, Long Island City, N. Y., in the Philadelphia territory for the past ten years, has been appointed Philadelphia district sales representative by Hendrick Mfg. Co., Carbondale, Pa. Mr. Baldwin will handle the sale of the company's steel grating, treads, perforated metal grilles and other products in southeastern Pennsylvania, southern New Jersey (including Trenton), and Delaware and Virginia. He will continue to make his headquarters at 5813 North Fairhill street, Philadelphia.

Obituaries

THOMAS W. SMITH, 78, one of the founders of Pittsburgh Screw & Bolt Corp., Pittsburgh, died at Erie, Pa., July 16. He was born in Ireland in 1854 and went to Pittsburgh at the age of 19. He had been a resident of the Pittsburgh district for nearly 60 years but lately had retired from active business. Mr. Smith was at one time affiliated with the Oliver Iron & Steel Co., Pittsburgh, and later aided in founding the Pittsburgh Screw & Bolt Co., from which firm he retired in 1912. He was a member of the present board of directors of the Pittsburgh Screw & Bolt Corp. He was a member of the Duquesne club, Pittsburgh.

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John W. Dyar, 57, Detroit capitalist and director of the Truscon Steel Co., died July 19.

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M. A. Clark, 47, recently assistant superintendent of the Indiana Harbor, Ind., tin plate mill of Youngstown Sheet & Tube Co., died July 18.

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J. W. Raymond, master mechanic of the M. A. Hanna Co. iron ore dock at Erie, Pa., for many years, died recently, following a long illness.

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Emerson M. Williams, 34, for the past five years secretary-treasurer of the Standard Alloy Co., Cleveland, died at Cleveland July 16. He was a graduate of the University of Michigan.

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Ralph F. Chattillon, 52, president of Foster Bros. & Chattillon, cutlery manufacturers at Fulton, N. Y., and vice president and director of John Chattillon & Sons, manufacturers of scales, New York, died at Syracuse, N. Y., July 2.

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William Strube, 55, president of the Strube Screw Machine Works, Chicago, was killed July 14 by the explosion of an air bomb at the laboratory of his plant. Edward D. Strube, a brother, narrowly escaped injury.

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Walter E. Hess, 40, assistant secretary of the Bethlehem Steel Co. and one of its legal staff, died July 18 at Brookline, Mass. He had been ill for about two weeks. He was born in Uniontown, Pa., and was graduated from Yale in 1915. He then entered Harvard law school, where his studies were interrupted by the World war, but he received his degree in 1920.

MIRRORS OF MOTORDOM

DETROIT

A CAR for the extremely low price market, with exceptional economy in operation and maintenance, flashy acceleration, high top speed, and safe, steady and comfortable at all speeds—such was the specification of the Hudson-Essex management for the new Essex terraplane.

Design thus was pivoted on light weight, and Hudson-Essex engineers proceeded to make steel their chief ally. Probably no stock car ever has been offered in which the ratio of steel to total weight is so high.

Except for the roof rails, battery cover and dome light mounting in all models and several small parts in the coupe and two-door sedan, no wood is used in body construction. The result is a car weighing 2290 pounds for the 4-door sedan, compared with 2360 pounds for the Ford four, 2450 for the Ford eight, 2770 for Chevrolet, 2800 for Willys and 2875 for Plymouth.

Wooden floor boards have given way to a sheet steel stamping bolted to the base of the body and in effect forming a pan. Floor carpets and rubber mats are laid directly on this stamping. Wooden sills are eliminated and the body is mounted directly on the frame side rails.

Tacking Strips Are Steel

Interior side pillars of the body are steel. Tacking strips are steel with the edges turned over to grip a fiber insert. The bodies are all welded, in the 4-door sedan line the parts being a rear, the two rear quarters, the doors and the one-piece cowl, windshield pillars and top. Body and fender sheets are No. 20 gage.

During the first month the Essex sales policy will revolve around demonstrations, and technical specifications will be subordinated. However, a few specifications are now available.

It is because of certain airplane characteristics, not only in speed but also in the design of the engine, that the new Essex series is called the terraplane, the current Essex series being continued as the pacemaker.

Wheelbase of the terraplane model is understood to be 106 inches, identical with Ford. The rear tread is 54½ inches and the front 53, compared with the 56½ and 55¼ inch treads on the pacemaker series. This narrowing of the front tread enables the front as well as the rear springs to be splayed.

Engine Free of Gadgets

The Essex six pacemaker engine, with three main bearings and a compensated crankshaft, has been refined and mounted in the new series. At 3200 revolutions with the standard head, 70 horsepower is claimed; with a high compression head, 80 horsepower. The engine is mounted on two vacuum cups at the front and one solid rubber bearing under the transmission at the rear.

As an approach to "pure transportation" there are no gadgets on the engine. The transmission also is of the standard type, although automatic clutch control is available at slight additional cost. Incidentally, free-wheeling is likely to disappear from a good many medium price models next year.

A new design water pump draws water out of the engine block instead of forcing it through, thereby enabling the radiator water supply to be cut down to 3 gallons and saving 1¼ gallons of weight from the present series. An opalescent finish, which gives the appearance of depth, is standard on all models.

Through light weight, a powerful engine and low height, Hudson-Essex is convinced it is offering not "just another car" but is pioneering a new type. Certainly in price it is pioneering, as the base factory quotation of $550 on the 4-door sedan is $40 less than the comparable Ford and Chevrolet models and only $10 above the Ford four.

The possibility of a price war is a lively one. Only two days prior to the official showing of the new Essex, Chevrolet in the Detroit area cut its delivered price on most models $36.80, thereby bringing them down almost to a parity with Essex. According to Chevrolet, the reduction is not in the base price but in delivery and equipment charges.

Plymouth, also in the Detroit area, recently offered its thrift series at reductions but these are understood to be hold-over models with some new equipment added.

What Ford will do is, of course, the key to the entire situation. But with Essex and Chevrolet undercutting by $40, an adjustment in Ford prices would appear a foregone conclusion. This would mean a still more unhappy situation for material and parts suppliers.

Such a price war would enliven Detroit just as it is entering what promises to be an unusually dull 60 days. Except Chevrolet, which has stepped up its July schedule of 28,000 to 29,000 units by about 5000 units, other manufacturers are scaling down their operations. This, of course, excludes Hudson-Essex, which is running at the best rate of the year, on the new Essex series.

Ford Shutdown in August?

It will be recalled that Ford assembled for the domestic market about 70,000 units in May and 95,000 in June. The original July schedule was for about 85,000 and for August, 55,000 to 60,000, but these figures are being radically revised.

The July showing of Ford may be not over 75,000 and it is widely reported in Detroit, although not confirmed by Ford, that a shutdown in the last half of August is possible. Usually there is a late summer vacation at the Rouge plant.

Ford was said to have about 300,-

000 orders for the new models in hand when production was started in May. By the end of July assemblies of the new four and eight will total between 225,000 and 250,000 units. While the eight is moving out to dealers, it is said that a number of the fours have been warehoused.

Budget Production Closely

Excepting Chevrolet, the General Motors lines are in low production. Never before has such rigid control been exercised over operations, and in lines other than Chevrolet it can be stated that the schedules for 1932 have been practically completed. From present indications, Chevrolet and Buick will start on their 1933 models about Nov. 1.

Plymouth has a few over 10,000 units to assemble to complete its 1932 program. The light car which Chrysler planned to fit into its line —presumably a four for Dodge—has been temporarily shelved; at least, interests identified with the preliminary work have received holdups.

The remainder of July and August unquestionably will be an extremely light period for the automobile industry. If Ford goes down for part of August, as reported, next month may be the slowest since March. July seems certain to fall below the 185,149 units of May. Yet, like the rest of the country, the industry is conferring hopes upon September.

Like the Rat and Cat Cycle

A plan which would solve all of the problems of the automobile industry and some of the difficulties confronting the oil industry is reported being worked out by two of the most important automobile and oil executives of the country. The plan, which is being circulated in Detroit, is this:

Oil producers are disturbed over the prospect of increased competition from Russia. How to stimulate demand for new cars and at the same time dispose of the used cars, as only 10 per cent of present sales are "clean," is vexing automobile manufacturers. Russia is assembling automobiles, but their record for reliability is not high. So——

American manufacturers will stimulate their industry by offering several times the normal value for used cars. These trade-ins will be shipped to England and rebuilt and re-tired there because of lower costs. Then these refurbished used cars will be shipped to Russia, with payment to be taken in oil.

This oil will be disposed of in world markets, with a trickle back to the United States, the controlled competition being more favorable to the American oil industry than unbridled competition from Russia. And receipts from the sale of Russian oil will compensate American manufacturers of automobiles for their excessive trade-in allowances!

Here and There In Industry

ATLAS CAR & MFG. CO., Cleveland, has appointed F. G. Dunbar & Son, 53 West Jackson boulevard, its representative in Chicago territory for the sale of its storage battery locomotives, trucks and tractors. The Dunbar organization represents several manufacturers of materials handling equipment.

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Concrete Steel Co. will rebuild its plant at Birmingham, Ala., recently burned, though on a smaller scale than formerly.

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Majestic Furnace Mfg. Co., 1723 Westlake avenue north, Seattle, has been reorganized as the Majestic Furnace Co., with increased capital. W. H. Carstens is president.

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Elmwood Casting Co., Cincinnati, Louis B. Weber president, has petitioned court for permission to liquidate and dissolve, 90 per cent of stock joining in the petition.

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Steel Industries Engineering Corp., Empire building, Pittsburgh, has recently been appointed Pittsburgh district representative for the Titusville Forge Co., Titusville, Pa.

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Mills Co. Inc., Cleveland, manufacturer of portable and stationary partitions, has appointed R. E. Arnold, 84 State street, Boston, its representative for New England, except Connecticut.

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Titan Electric Co., Hillsdale, Mich., recently removed from Adrian, Mich., has started operations in its new plant, though it is not completed. It is producing small electric motors, electric grinders and pump jacks. Frank Roberts is head of the company.

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Inland Steel Co., Chicago, has been granted permission by the war department to construct bulkheads and fill in Lake Michigan east of the entrance of the Indiana Harbor canal. About 301 acres of land will be made, to be used for future expansion by Inland.

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Campbell Transportation Co., Pittsburgh, is moving the first three of a fleet of 12 steel barges from Weirton, W. Va., to Louisville, Ky. The barges are loaded to capacity with tin plate from the Weirton Steel Co., Weirton, and were built by the Marietta Mfg. Co., Pt. Pleasant, W. Va.

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Detroit City Gas Co., Detroit, has placed orders with the Semet-Solvay Engineering Corp., New York, for several equipment items required on various plants. The material includes four 30-inch hydraulically operated superheater stack valves and backrun piping.

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Wackman Welded Ware Co., St. Louis, is establishing a branch manufacturing plant at New Orleans, occupying the Stern Foundry Co. Property at Market and Annunciation streets. It products are drums and containers for lubricating oils, molasses, chemicals and similar materials.

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Worthington Pump & Machinery Corp., with executive offices at 2 Park avenue, New York, and general offices at Harrison, N. J., will transfer and consolidate its designing, engineering and manufacturing activities formerly carried on at its Cincinnati works with those at Buffalo. Cincinnati plant equipment will remain intact for the present and the Cincinnati district sales office will not be affected, Earl Vinnedge remaining in charge.

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Combustion Engineering Corp., 200 Madison avenue, New York, has received a contract for two additional steam generating units for the new triangle heating plant for the treasury department at Washington. The original contract was for four units, with two additional optional, the option now being exercised. The contract includes boilers, stokers, steel-encased boiler settings, water-cooled furnaces, and forced and induced draft fans and drives.

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American Shim Steel Co., New Kensington, Pa., has been organized to manufacture and distribute shim steel to the railroads, machinery builders and other users. The company will occupy the property of the Kenney Machine Co. C. Thomas Best, formerly purchasing agent for a Pittsburgh district steel company, is president. The new company is in position to furnish all sizes of shim steel and carries a complete stock of standard sizes.

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Westinghouse Electric & Mfg Co., East Pittsburgh, Pa., is building an all-welded steel warehouse with 60,000 square feet of floor space at its plant at Mansfield, O. It will be four stories, to be completed by Nov. 1 and will cost about $150,000. Three crane aisles, each 65 feet wide, will offer storage 40 feet high and will be utilized for electric ranges and refrigerators. Roof trusses are of a light-weight design created by Westinghouse engineers, giving full strength with a minimum of fabrication. A conveyor system will be installed enabling movement of materials from the manufacturing buildings directly to the warehouse.

EDITORIAL

Will Agriculture Lead The Way Out?

SO MUCH has been said and written of the sad plight of the American farmer that the appearance in recent weeks of signs of early relief from some of the most pressing of his difficulties is most welcome. Industry is directly interested in an improved agricultural situation because the tide of fortune in industry follows with uncanny accuracy the ebb and flow of farm prosperity.

This is shown clearly in the chart on page 11 of this issue. The trend of industrial production is shown to lag about a year behind the trend of marketings of agricultural products. Apparently the chart presents graphic confirmation of the belief held in many quarters that a fair degree of prosperity on the farm is a necessary prelude to activity in the nation's mills and manufacturing plants. Certainly this has been true during the 12-year period covered by the chart.

Therefore industry should give more than cursory attention to the present outlook in agriculture. Prices of farm products attained their postwar peak in 1920, dropped to depression low in 1921, rose to another peak in 1925, eased to another valley in 1927, advanced slightly in 1928 and from that time dropped steadily to an extremely low point in May of this year. Since the last week of May prices of many agricultural prices have advanced. Gains have appeared in corn, cotton, eggs, butter, potatoes, hogs, beef, wool, hides, sugar and a few other commodities.

Face Harvest With Prospect of Higher Prices for First Time Since 1927

Perhaps too much significance should not be attached to these price advances until they have been tested over a longer period. Nevertheless it should be remembered that the important marketing season for farm products now is only a few weeks away. This is the first time in five years that the farmer has faced harvest time with a prospect of higher prices. In 1928, 1929, 1930 and 1931 he approached the fall confronted with the gloomy certainty that prices would fall. Then the outlook was hopeless; today it is brighter if for no reason more tangible than that prices of many important farm products have advanced steadily for seven weeks.

Of course rising prices and greater volume of sales will not cure all of the farmer's ills. Politicians usually wax eloquent in deploring the sad state of farm land values, the increasing number of mortgages, etc. It is stated often that agricultural land values are depressed below the prewar level. This is true, but it is not generally realized that values shown in the 1910 and 1920 farm censuses were far above the normal trend line. Values in many states in the depression year of 1930 were almost up to the calculated normal. In agriculture, as in industry, comparisons of 1930 values with those of the abnormal postwar years were more alarming than justified by facts.

Farm taxes are admittedly too high, but are they any more out of proportion than those paid in urban centers? Public demand for economy will lower the tax burden in time.

Some Bankers Have Not Lost Faith in Possibilities of Farm Properties

The following excerpts from bankers quoted in *The Bankers Monthly* are significant:

"First mortgages on farm lands are still considered to be among the best paper obtainable."—South Dakota.

"Farmers in our community are in better shape now than they have been in two years. They are all bent on getting out of debt."—Kansas.

"Our customers are all farmers and agriculture is still a sound industry, though the income is small. Ours is a rich country and in our county, 24 miles square, we still have over $6,000,000 of bank deposits after over half the banks have closed. That is nothing compared to what we have left in the soil from whence it all came. . . . Never did I have as much faith in land as now."—Iowa.

We are not trying to belittle the farmer's difficulties; admittedly they are serious. But we suggest that perhaps the picture of American farms painted by some of our congressmen has been overdrawn. Their plight may not be as hopeless as it has been represented.

At any rate the increased buying power already created by the recent gains in prices cannot be ignored. It is worth much to a troubled nation to know that at last the trend in agriculture is in the right direction. If it continues upward, industry soon will begin to feel its effect.

THE INDUSTRIAL DIAL

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THE pulse of industry is stronger, stimulated by numerous signs of actual or pending favorable developments. Commodity prices are holding the center of the stage. Observers are watching closely to see whether or not the rise in livestock, cotton, sugar, dairy products, etc., will be communicated to other commodities with sufficient force and penetration to cause a marked upturn in prices generally.

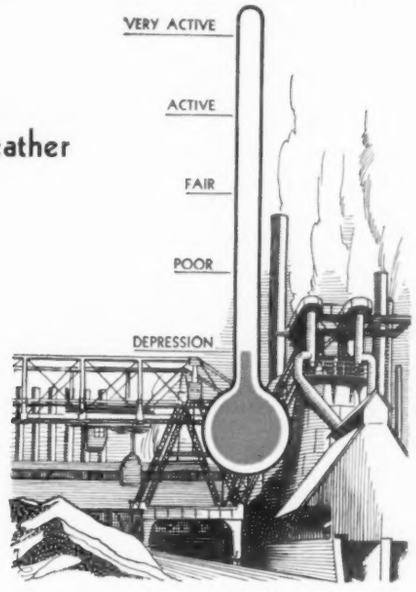
Some encouragement has been generated by the ease with which several issues of new financing were floated recently. The last weekly statement of the Federal Reserve board reflected an improved situation. Reports of resumption of activity in scattered manufacturing plants are gratifying, but it should be remembered that in many cases these resumptions are merely the delayed return to work of establishments which shut down for the July 4 holiday. Nevertheless employment, as reported in a number of key cities, shows slight improvement.

Where Business Stands

Monthly Average, 1931 = 100

	June, 1932	May, 1932	June, 1931
Steel Ingot Output	43.1	53.2	102.2
Pig Iron Output	41.7	50.5	109.1
Freight Movement	68.9	72.9	104.2
Building Construction	40.3	51.6	114.8
Automobile Output	92.5	94.3	124.4
Wholesale Prices	76.7	76.3	100.1

Industrial Weather



TREND:
Uncertain

Seasonal Impetus Is Near

The time is drawing near when seasonal influences normally lift the level of activity in many important lines of business. Coal production normally rises in August and continues at a relatively high rate until the end of December. Marketing of livestock and crops picks up appreciably in August, rises sharply in September, touches the peak of the year in October, and tapers off gradually to a low point in the following April. October usually is the banner month of the year in carloadings.

Accumulated Demand May Help

Should commodity prices continue strong until the seasonal impulse begins to be felt in August, the result likely will be an increase in industrial activity somewhat beyond seasonal limits. This possibility is heightened by the pentup demand which has developed during the period of restricted consumption and by improvement in the buying power of certain groups of consumers, which is developing slowly but surely.

The influence of the farm population will be important throughout the period of recovery. Resumption of its purchasing of industrial products on even a modest scale would serve as a powerful stimulant. Ability to begin such purchasing would be hastened by a continuation of the firmer prices of agricultural products which have appeared in recent weeks.

Business Trend Charts of the Month

Production

Blast furnace production rate ..... July 11, p. 20
Steel ingot production ..... July 18, p. 24
Pig iron production ..... July 11, p. 20
Industrial production ..... July 4, p. 22

Demand

Unfilled orders, U. S. Steel Corp. ..... July 18, p. 23
Railroad car orders ..... July 11, p. 21
Index of machine tool orders ..... July 25, p. 21
Building construction ..... July 4, p. 22
Automobile production ..... July 4, p. 21
Foundry equipment orders ..... July 25, p. 22

Prices

Bradstreet's index of commodity prices ..... July 11, p. 19
Iron and steel price index ..... July 18, p. 21

Miscellaneous

Foreign trade ..... July 25, p. 21
Freight traffic ..... July 11, p. 21; July 18, p. 23
Commercial failures ..... July 25, p. 22
Iron and steel imports and exports ..... July 4, p. 22
Monthly railroad earnings ..... July 18, p. 24

Thumb Nail Sketches Of Business

Refineries in the petroleum industry are operating at 62 per cent of capacity. Daily average production of crude oil is steady. Gasoline consumption has been increasing seasonally. Stocks of crude have been held down rather rigidly. In general the petroleum situation is encouraging.

Soft Coal Output Faces Seasonal Rise

While the total production of bituminous coal declined in the week ending July 9, the daily average was up slightly. The soft coal industry is approaching the time of the year when a seasonal pick-up is to be expected. In 1929 and 1930 the improvement started in mid-August, and in 1931 it appeared in the last week of August. Unlike the trend in 1929, 1930 and 1931, however, the course of daily average production in 1932 has been upward since an extremely low point early in June. Seasonal influence should be expected to carry output upward until the easing-off period in December arrives.

Cement Prices Rise Sharply

Recent increases in the price of cement are interesting because of the sharpness of the change. In Kansas City quotations jumped from 75 cents to $1.25 per barrel in a month. At St. Louis the rise was from 85c to $1.15 and Illinois producers announced a similar adjustment. This represents the first substantial upward swing in cement prices in a year.

Cost of Government Is Challenge

Taxes is the United States are collected by 250,000 agencies representing federal, state and local governments. One-quarter of the income of all the people goes to these quarter of a million collection agencies for taxes to defray the cost of government. One-quarter of the income received by the federal government is paid out in pensions. During the past 20 years, federal government costs have increased 543 per cent, state government costs 600 per cent and local government 450 per cent.

Farm Outlook Somewhat Brighter

Before the recent rise in livestock prices, the level of quotations for agricultural products was about 43 per cent below the five-year prewar average. Taxes were more than twice as much as before the war and the prices farmers had to pay for commodities were above prewar levels. These three factors constitute the principal difficulties in the farm situation. Lower world stocks of grain may contribute to a firmer tone in wheat, corn, etc., which coupled with the already stronger livestock prices, may help the farmers financial position. The prospect for lower taxes is good, although time will be required for necessary adjustments resulting from the public demand for government economies.

Commodity Prices and Buying Power

Weekly commodity price barometers are in their seventh week of consecutive increases. Thus far the gains have been largely in food, textile and leather products. A spread of the influence to construction materials is hinted in the stronger tone of cement and certain grades of lumber. Some authorities estimate that price gains since June 1 have added a billion dollars to the purchasing power of the nation.

The Barometer of Business

Industrial Indicators

	June, 1932	May, 1932	June, 1931
Pig iron output (Daily average, tons)	20,888	25,282	54,599
Machine Tool Index	39.1	37.5	88.6
Unfilled orders (tons)	2,034,768	2,177,162	3,479,323
Ingot output (Daily average, tons)	34,511	42,540	81,837
Dodge Bldg., awards in 37 states (sq. ft.)	.....	15,742,200	35,000,800
Automobile output	*190,600	193,370	256,297
Coal output, tons	17,712,000	18,394,000	29,190,000
Business failures; number	2,688	2,788	1,993
Business failures: liabilities	$76,931,452	$83,763,521	$51,655,648
Cement production, Bbls.	.....	6,917,000	14,125,000
Cotton consumption, bales	312,000	333,000	454,000
Car loadings (weekly average	491,539	521,939	745,738

*Estimated.

Foreign Trade

Exports	$115,000,000	$132,194,000	$187,077,000
Imports	$121,000,000	$112,275,000	$173,455,000
Gold exports	$226,117,000	$212,229,000	$40,000
Gold imports	$18,395,000	$16,715,000	$63,887,000

Financial Indicators

	June, 1932	May, 1932	June, 1931
25 Industrial stocks	$68.82	$77.94	$195.22
25 Rails stocks	$12.77	$14.16	$67.12
40 Bonds	$57.52	$57.00	$82.84
Bank clearings (000 omitted)	$21,653,755	$20,410,532	$38,841,753
Commercial paper rate N. Y., per cent)	3	3-3½	2-2½
*Commercial loans (000 omitted)	$11,263,000	$6,678,000	$7,945,000
Federal Reserve ratio, per cent	.....	64.4	84.1
**Railroad earnings	$11,950,652	$20,621,017	$11,699,649
Stock sales, N. Y. stock exchange	22,997,862	23,151,047	58,718,657
Bond sales, par value	$225,775,800	$216,621,400	$266,259,000

*Leading member banks Federal Reserve System.
**May, April and May respectively.

Commodity Prices

	June, 1932	May, 1932	June, 1931	Monthly aver. 1913
STEEL's composite average of 14 iron and steel prices	$29.54	$29.62	$31.02	$26.32
Bradstreet's index	$6.72	$6.68	$8.87	$9.21
Wheat, cash (bushel)	66c	72c	93c	92c
Corn, cash (bushel)	45c	46c	70c	51c
Petroleum crude (Bbl.)	90c	90c	32c	$2.50

Exports

June, 1932	$115,000,000
May, 1932	132,194,000
June, 1931	187,077,000

Imports

June, 1932	$121,000,000
May, 1932	112,275,000
June, 1931	173,455,000

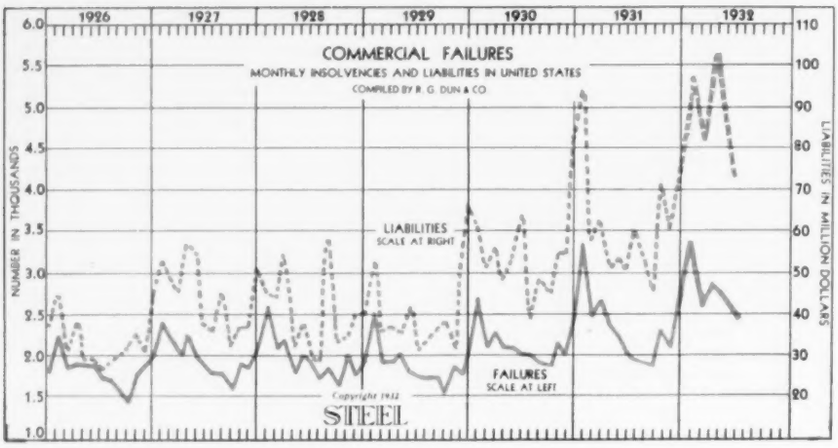
Foreign Trade Balance Is Off As Imports Exceed Exports

The report from the bureau of foreign and domestic commerce for June reveals a $6,000,000 excess in valuation of imports over goods leaving this country. Merchandise exports in June were valued at $115,000,000, being the smallest for any month since August, 1914, and the smallest for any June since 1908. In June last year exports totaled $187,077,000. Imports for June totaled $121,000,000, a gain of nearly $8,000,000 over the preceding month while in June, 1931, imports totaled $173,455,000. For the first half of this year exports have totaled $841,803,000 while imports aggregate $757,554,000 leaving a trade balance of $84,249,000.

Barometer of Machine Tool Orders Moves Upward in June

According to the report for June received from the National Machine Tool Builder's association, the three months' moving average of machine tool orders continued to show a slight gain. The index of gross orders for June was 39.1 compared with 37.5 for the preceding month and 88.6 for June last year. Whether this slight increase in orders carries any particular significance is uncertain at this time and builders are content to wait a month or two until the indications are a little more apparent. The shipment index of 22.3 for June was the lowest for all time and compares with 31.6 for May and 94.6 for June, 1931.

	Per Cent
June, 1932	39.1
May, 1932	37.5
June, 1931	88.6



Liabilities

June, 1932	$76,931,452
May, 1932	83,763,521
June, 1931	51,655,648

Number

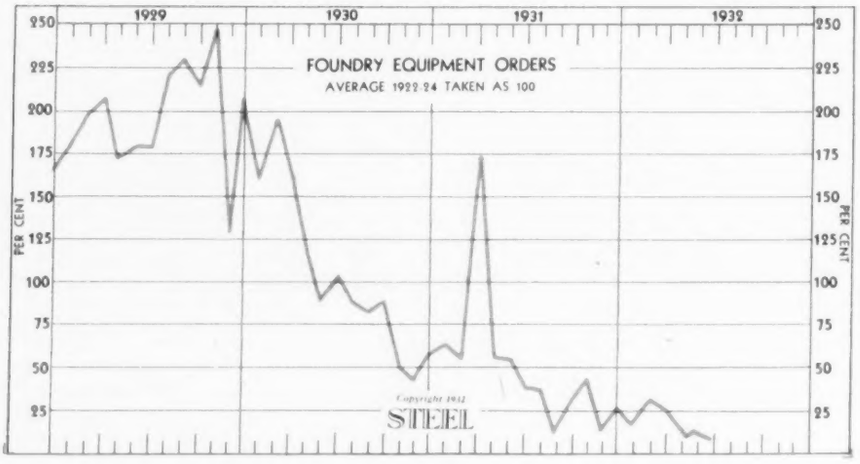
June, 1932	2,688
May, 1932	2,788
June, 1931	1,993

Commercial Failures Decline, But Total Is Record for June

Although the number of commercial failures in the United States for June declined 3.6 per cent from the May total, it established a new level for June. According to statistics compiled by R. G. Dun & Co. the number of insolvencies reached a total of 2688 for June which is 34.9 per cent in excess of the 1993 failures of June, 1931. The indebtedness for June, although declining nearly $7,000,000 from the previous month are still above the average. The total was $76,931,452 for June compared to $83,763,521 for May, but is 48.9 per cent higher than the $51,655,648 reported for June last year.

Foundry Equipment Orders Suffer Relapse in Sixth Month

After an encouraging spurt in May the index of foundry equipment orders in June suffered a relapse which carried it down almost to the low point of April. According to the report of the Foundry Equipment Manufacturers' association returns from 15 firms showed orders in June at the index number of 14.2 compared with 18.5 in May. The index for shipments dropped from 24.5 in May to 11.1 for the current month. Unfilled orders stood at 23.1 in June compared to 19.7 in May and 51.8 in June last year. The high point thus far this year in new orders was 32.9 and the low point 13.9 in April.



	1932	1931
June	14.2	40.9
May	18.0	54.1
April	13.9	57.7
March	27.9	174.4
Feb.	32.9	54.7

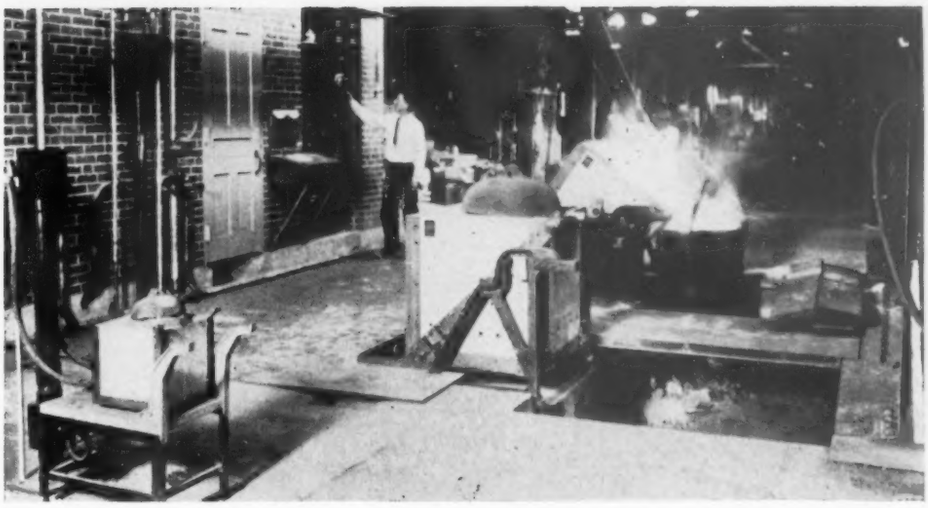


Fig. 1—These three furnaces in the plant of the Lebanon Steel Foundry are operated by a 300-kilowatt generator delivering 960-cycle power. The two large units have a capacity of 1000 pounds each and the small unit 50 pounds

PRODUCING STEELS AND ALLOYS IN CORELESS INDUCTION FURNACES

By R. N. BLAKESLEE JR.
Ajax Electrothermic Corp., Trenton, N. J.

DURING the last three or four years, a number of interesting installations of coreless induction furnaces have been made in the castings industry for melting alloy steels, such as stainless, heat and corrosion resisting; high speed steel; plain carbon steel; also cast iron and bronze. These furnaces, which are in general limited to this field, sometimes are called high frequency furnaces because usually, although not always, they are powered with current the frequency of which is over 60 cycles.

Many coreless induction furnaces have been installed in steel rolling plants for pouring ingots of tool steel, stainless steel, and the like. In the foundry industry this same type of furnace has proved to be valuable equipment because it reproduces analysis and structure of alloys and reclaims scrap, particularly chromium bearing scrap, with very low loss. The flexibility permits considerable tonnage per day in relatively small weight heats.

An installation in the Lebanon Steel Foundry, Lebanon, Pa., shown in Fig. 1, consists of a 300-kilowatt generator, driven by a unity power factor synchronous motor, and three furnaces. The generator produces the 960-cycle power with which the furnaces are energized.

The two larger furnaces are rated at 1000 pounds each and are so arranged that either one of them may be put into service, or if preferred a heat can be melted in one furnace while the other is being charged. The small furnace is rated at 50 pounds capacity and is used to make pilot heats or small castings. It is so connected that it may be run simultaneously with one of the large furnaces. Many times, however, the 300-kilowatt generator set has been operated just to run only the

Fig. 2—A 100-kilowatt lift-coil furnace used by the General Fire Extinguisher Co. for melting bronze in crucibles

FIG. 3—A general view of an installation in the plant of the Babcock & Wilcox Co. for producing plain carbon steel castings, stainless and heat and corrosion-resisting steel, and high speed steel. Melting capacity is 2¼ tons per hour and castings ranging from 200 to 8000 pounds in weight can be made

small furnace for miscellaneous work.

Either acid or basic linings are used; often one furnace is lined basic and the other acid. Basic linings are more costly, but in general they give longer life. Fig. 4 shows some of the work produced in these furnaces. In the lower portion of the illustration is a centrifugal pump casting for handling corrosive liquids; it is made of 30 per cent chromium 12 per cent nickel stainless steel. In the upper portion are shown filter press frames and plates made from a low-carbon 18 per cent chromium 8 per cent nickel stainless steel.

Crane Tilts Furnace

All three furnaces usually are tapped into ladles and the molds poured off from the ladles. A regular shop crane is pressed into service to tilt the furnaces, which swing around the spout. With 300 kilowatts capacity, the melting time of a 1000-pound charge of 18-8 steel is about 1 to 1½ hours with the time for the complete cycle depending upon whether one large ladle or a number of small ladles are used. In the latter case, a small amount of power is kept on the furnace to maintain temperature.

The furnaces are arranged with flexible lead connections which permit power being kept on even when tilted until practically all the metal is poured. The 50-pound furnace draws 30 to 60 kilowatts, depending upon whether or not there is a large furnace on at the time, and heats require from 20 to 60 minutes to melt.

Fig. 3 shows the foundry of the Babcock & Wilcox Co., Barberton, O. Available high-frequency sources of power are a 1250-kilowatt 960-cycle generator and a 150-kilowatt 2000-cycle generator, which together give a melting capacity of about 2¼ tons per hour. Furnaces in sizes ranging from 400 to 3000 pounds are connected ready to run and by arranging so that several furnaces are ready to pour at the same time, single castings up to 6000 or 8000 pounds have been made.

With such a battery of furnaces, which includes 1000 and 1500-pound units as well, practically any size heat can be made from 200 to 8000 pounds. In other words, this foundry can respond rapidly to changes in production schedules. Demand for various size heats as well as heats of different analysis can be met in the minimum time. It is not necessary to wait until sufficient orders have accumulated before starting melting.

Ability of the induction furnace to reproduce results time after time assures constant high quality as well as efficient operation. The balanced three-phase high power factor load drawn from the lines coupled with the absence of wide fluctuation makes for minimum power charges.

The Babcock & Wilcox foundry produces plain carbon steel castings, stainless, heat and corrosion resisting steels, and high speed steel. It has the largest high frequency melting capacity of any in the world producing sand castings.

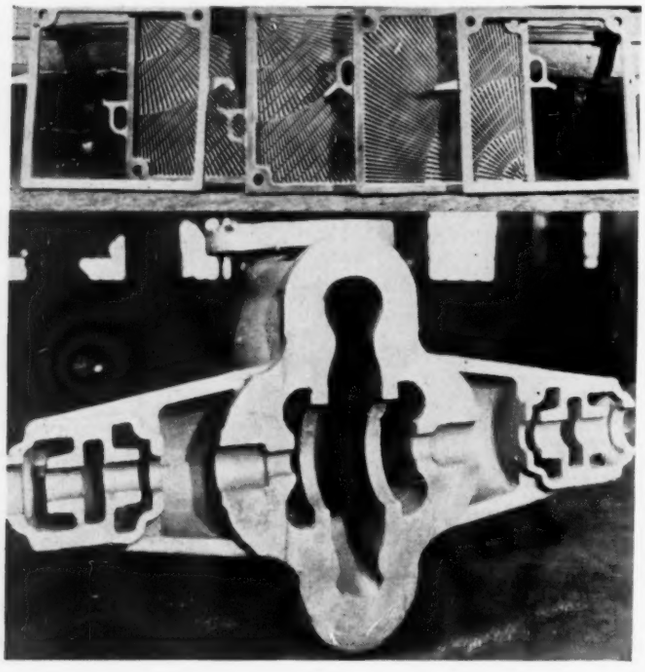


FIG. 4—The upper part of this illustration shows filter press frames and plates cast from 18-8 steel and the lower part a pump casting of 30-12 chrome-nickel steel

Making Chromel Heats

Two coreless induction furnaces shown in Fig. 6 are employed by the Hoskins Mfg. Co. at its Detroit plant. This installation, the most recent of two outfits, has a 300-kilowatt generator, motor driven. The furnaces, arranged for alternate operation, are rated at 600 pounds. The 600-pound charges of chromel, containing 80 per cent nickel and 20 per cent chromium, of the highest grade are melted in about 1 hour. The older equipment is rated at 150 kilowatts-300 pounds and it melts in about the same time. The two equipments are used for both chromel castings and ingots.

The illustration in Fig. 6 shows a novel turntable arrangement for

pouring ingots. The tilting hoist is a high-speed air hoist with speed control so that the furnaces may be tilted in a few seconds or slower.

Fig. 5 shows a 150-kilowatt installation in the plant of the Duriron Co., Dayton, O. This is a simple equipment with two furnaces of 600 pounds rating, only one of which operates at a time. The normal charge of 650 pounds is melted in from 1¼ to 1½ hours. The motor-generator set is located in the small room back of the switchboards.

Although both furnaces are rated 600 pounds in capacity, nevertheless smaller heats down to 250 to 300 pounds can be made, and this company upon occasions has been able to arrange both furnaces so that they were ready to pour at the same time so that 1200 to 1300-pound heats could be tapped. The Duriron Co. produces exclusively corrosion and heat-resisting castings and equipment.

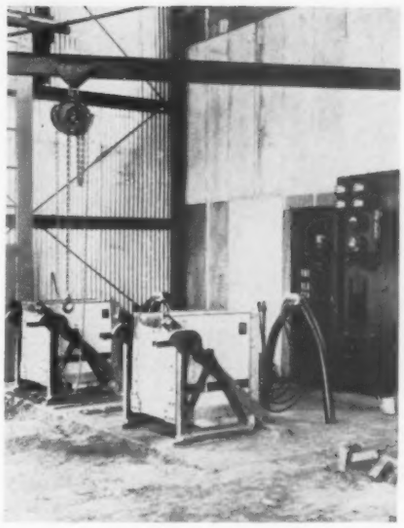


Fig. 5—A 150-kilowatt installation used by Duriron Co. for making corrosion and heat-resisting castings

Uses Lift-Coil Furnace

Among unique installations of coreless induction furnaces is one in the plant of the General Fire Extinguisher Co., Providence, R. I. This furnace, shown in Fig. 2, is used to melt bronze and has great flexibility. The power supply is a 100-kilowatt 480-cycle generator, induction motor driven, this motor-generator set being located in the basement while all meters and controls are at the furnace on the third floor.

The furnace, shown as the lift-coil type, consists of the usual water-cooled inductor mounted in a box which can be raised vertically on guides by means of a hoist. The 70-pound standard crucibles are mounted on a truck which runs on a track. When the track is pushed against a stop on one end of the track, one crucible lines up with the inductor box and the box is lowered over it.

Power then is turned on and melting starts. While the melting progresses, the second crucible is charged up with scrap or ingot. Melting of 89 per cent copper bronze requires 16 to 18 minutes, depending upon whether the crucible was originally hot or cold. When the charge is melted, the box containing the inductor coil is raised quickly and the truck is pushed against the stop on the other end of the track. This lines up the second crucible containing the new charge and the box and coil are lowered over it.

In the meantime, tongs are slipped over the first crucible filled with molten bronze and it is carried to the molds and poured, after which it is returned to the truck, recharged with scrap and is ready for another turn. Shifting of power from the first crucible to the second requires only about 15 seconds, with shifts as short as 7 seconds having been clocked. Not only is the annoying and costly job of ladle heating eliminated, but it is possible to run different mixtures from heat to heat.

The volume of refractory, exclusive of the crucible, is small and first heats or heats with new cold crucibles require but little longer than heats in which the crucible is warm. The furnace provides the usual inherent stirring and segregation of elements is impossible. Since the heat is generated within the metal, a characteristic of all induction furnaces, the crucibles give much longer life and wear out from abrasion against the edges of the molds and from tongs rather than from the heating and melting process.

The lift-coil type of furnace is not well adapted to steel or cast iron melting because the higher pouring temperatures of these metals makes the crucible difficult to handle with tongs and results in a relatively short crucible life. For low carbon steels, too, the graphite necessary for mechanical strength in the crucible is undesirable because of carbon pick-up.

Free-Cutting Copper Alloy Is Placed on Market

A copper alloy, containing silicon and iron and claimed to have exceptional resistance to corrosion and high physical properties, has been placed on the market by the Phelps Dodge Copper Products Corp., New York. The metal can be forged, die cast, sand cast, hot rolled, extruded, and drawn, and is being used in many commercial lines where formerly standard bronzes or special metals were specified. It is available in many alloys or grades, all of which are free cutting.

In cast form, the metal has tensile strength ranging from 48,000 to 63,000 pounds per square inch, a yield point from 24,000 to 28,600 pounds per square inch, and elongation of 15 to 38 per cent in 2 inches.

In wrought form, it has a tensile strength of from 60,000 to 189,000 pounds per square inch, yield point from 22,000 to 110,000 pounds per square inch, and elongation of 55 to 2 per cent in 2 inches, depending on alloy and temper.

Applications of this metal are said to include valve bodies and parts, pump bodies, liners, shafts, spindles and rods, worm wheels, gears, trolley wheels, bearings and bushes, screen cloth, welding rod, bells, gongs, bolts, nuts, fencing, plumbing fittings, screw machine products, ship sheathing, marine fittings, springs, clips, water wheels, turbine blading, and others.

Fig. 6—Hoskins Mfg. Co. uses a pair of 600-pound furnaces arranged for alternate operation for making castings and ingots of an 80 per cent nickel 20 per cent chromium alloy

Fig. 1—This steel sheet piling, recently pulled, was driven in 1912

Steel Sheet Piling in Good Condition After 19 Years

BY DR. J. S. UNGER

Director of Central Research Bureau,
Carnegie Steel Co., Pittsburgh

A STEEL object may be removed from service due to the destruction of only a small part of the object by rusting or some other cause. The average observer, without considering how the object was used or the causes which led to the failure, may fail to notice the irregular destruction. If he notices this condition, he may attribute it to lack of uniformity in the steel and condemn it.

A roofing sheet may show a comparatively narrow zone or part which has been destroyed by a slight drip from an overhead wire or pipe, or perhaps by drippings from a roof at a higher level, or by falling ice or snow. The alternate wetting and drying, in company with the mechanical destruction of the falling ice, have caused a certain sheet to fail more quickly than the majority of similar sheets on the same roof.

Soluble Salts Involved

Rivets in a stack have shown one head of the rivet to be almost destroyed, while the other head may be in almost perfect condition. This is due to difference in conditions at the ends of the rivet.

Those who have studied corrosion of steel find that certain salts in solution in water hasten the rusting, while other salts retard or inhibit corrosion. They have found on immersing steel samples in different kinds of salt solutions, the samples were corroded more rapidly when near the upper surface of the solution in contact with the atmosphere than if immersed at some depth.

A well-known test to hasten corrosion is alternately to wet the sample in water and then dry in the air, this being accomplished by fastening the sample to the circumference of a large slowly revolving wheel, the lower portion of which dips into a shallow tank of water. This method repeatedly wets and dries the sample under investigation.

A piece of steel, such as a column standing in water, shows the greatest corrosion a short distance above and below the water level. If the level is constantly changing as the sea level, due to the tides, or by wave action aided by the abrasion of the mechanically carried sand, the destruction at the average water level is more severe than at any other point. This is not confined to steel or other metals, but is observed on nonmetallic substances. The concrete lock-wall or breakwater, or the ordinary wooden telegraph pole show similar results.

Old Piling Removed

In rebuilding the Tenth street bridge over the Monongahela river in Pittsburgh in 1931, it was found necessary to remove some steel piling around the south abutment to make way for new foundations. This piling had been driven in 1912 while making certain bridge repairs and was in such excellent condition when pulled in 1931 as to be of considerable interest to engineers.

The piling was known as U. S. Steel Sheet Piling M-101, a 12-inch section weighing 35 pounds per foot. This section is obsolete at this time. It was rolled in 1912 by the Car-

Fig. 2 — Examination of the piling after pulling revealed its excellent condition. The branding and original mill scale were detected easily

negie Steel Co., Pittsburgh, of open-hearth steel of the following composition:

	Per cent
Carbon	0.22
Manganese	0.44
Phosphorus	0.011
Sulphur	0.035
Silicon	0.032
Copper	0.01

The piling was 24 feet in length. The bottom 10 feet was embedded in hard mud and gravel; the 7½ feet above this was surrounded by soft mud or ooze; and the top 6½ feet was standing in water with about 1½ feet extending above the average water level in the pool. The piling as it appeared before pulling is shown in Fig. 1.

The excellent condition of the piling after 19 years service was immediately apparent after pulling, as the branding and original mill scale were detected easily. With the exception of a portion 3½ feet long at the top, of which 1½ feet extended above the water and 2 feet below the water, very little rusting or pitting was noticeable. Some idea of the condition is to be gained from Fig. 2.

To determine the difference in rusting of the different parts of the piling, a piece about 12 inches long was cut by a torch 18 inches from top of pile at the water level. A second piece, 12 inches long, was cut 10 feet from the top of the pile to represent the middle of the pile. A third piece, 12 inches long, was cut from bottom of pile to represent that part driven into hard mud and gravel. After each piece had been carefully cleaned, it was examined, and the middle specimen used as a basis for comparison, since it was almost in the same condition as when rolled.

Calculate Metal Loss

Pieces exactly 10 inches long were machined from each specimen and carefully weighed on a special scale weighing to 1/100 of a pound. From these weights the loss of metal at the top and bottom were calculated in percentage as follows:

	Loss in weight, per cent
Top of pile at water line	14.9
Middle of pile	none
Bottom of pile	0.4

Fig. 3 shows close-up views of the top, middle and bottom sections of the pile after all rust was removed. A comparison of the middle of pile with the top shows the greater depth of scaling and pitting at the top of pile. When the comparison is made between the middle and bottom, there is very little more scaling at the bottom of pile than at the middle.

Fig. 4 brings out the difference in thicknesses of the web of pile at the top compared with the middle and bottom, but this is best shown in the sketch at the bottom in which the piece representing the top of pile was superimposed on the portion representing the middle, and one side of each specimen matched over the other and a line drawn around the outside perimeter of each specimen. This shows clearly the reduction in thickness, by rusting, of the top of pile in comparison with the middle portion.

Owing to the coal developments covering many years, the Monongahela river is contaminated by the drainage from the operating and also the abandoned mines, particularly at the lower portions of the river, and it is only during extremely high level that the water becomes slightly alkaline or neutral. During the major part of the year the water contains free sulphuric acid and in periods of very low water, particularly in the months of September, October and November, the free acid increases, frequently running well over 100 parts per million.

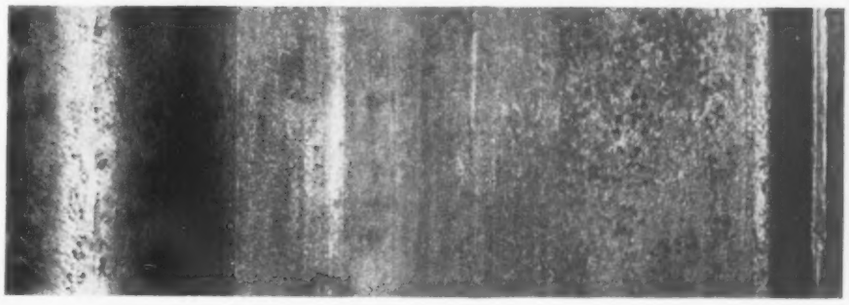
Steel subjected to this water will show fairly rapid corrosion, particularly near the surface of the water. It might be said in an approximate way that this piling has lost less than 1 per cent annually and this applies to places where the steel is alternately dry and wet from the action of waves from river craft or other causes.

Average Condition Good

The feature of interest to the engineer is the average good condition of the pile as a whole after 19 years exposure, and that the more severe corrosion was at or near the water level. The zone below a 2-foot depth of water, totally submerged in water and soft mud, showed practically no deterioration, while the zone at the water line down to 2 feet below the surface showed a reduction in weight of 14.9 per cent. This latter condition can be remedied easily by placing a concrete cap or cover over the piling, or by cutting off the top and replacing by new piling when it has worn away so as to be of no further service.

Under the conditions where this

Top of pile



Middle of pile

Bottom of pile

Fig. 3—The top section of the pile showed the deepest scaling and pitting. The bottom section showed a little more scaling than the middle section, but this is attributed to abrasion resulting from driving into hard gravel and shale

Top section

Middle section

Bottom section

Fig. 3 — These illustrations show how corrosion reduced web thickness of the top section, as compared with middle and bottom sections. The line sketch shows the top section superimposed on the middle section

piling was used, it should be serviceable for more than 50 years.

These points should be considered by all engineers in the design of steel sheet piling structures where the piling is to be incorporated as an essential part of the finished, permanent structure.

Rivet-Bolt, Driven Cold with 5-Pound Hammer, Shows High Strength

TESTS are being made and commercial production started on a rivet-bolt fastener for lap structural joints, the use of which would eliminate need for the rivet hammer, heating furnace and other heading equipment. The unit is being produced by the Bethlehem Steel Co. and other shops for the Dardelet Threadlock Corp., New York, and already has been marketed for several large construction jobs, notably for a section of the Madden dam, Panama, now under construction.

Bolt Neck Is Ribbed

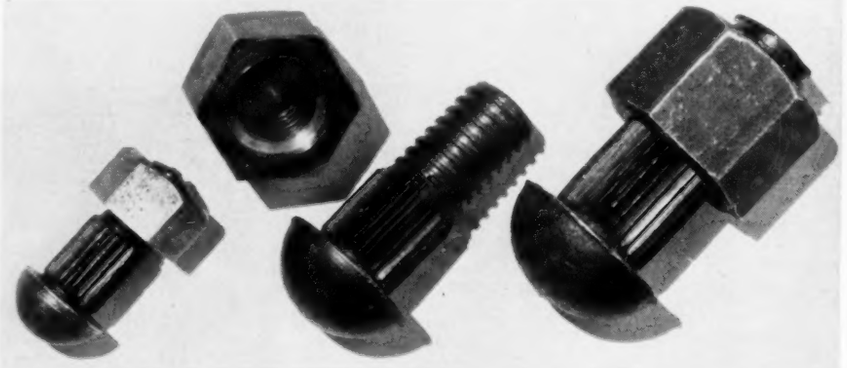
This rivet-bolt has a standard A. B. A. rivet head, the shank or neck of the bolt being ribbed to the thickness of the plates to be held. This ribbed section of the shank has an overall diameter 3/32-inch larger than the nominal size of the bolt, outside diameter of the ribbed neck being approximately 1/32-inch larger than the drilled or punched hole. The threaded section, equipped with the standard locking thread which the Dardelet company features, is of the nominal size of the bolt, or slightly smaller in diameter than the ribbed shank.

One man, with a 5-pound hammer, drives the rivet-bolt, the oversized ribbed shank biting into the punch holes of the plates, setting up a body-bound fit, maintaining a maximum bearing surface, filling the entire hole, resisting displacement and allowing development of full shear value. The nut, tightened and locked with a half to three-quarter turn with a standard wrench, is recessed to accommodate the end of the ribbed section when necessary, allowing for variations in thickness of parts and increasing the grip range.

Tests of the rivet-bolt have been made when constructed of standard structural rivet steel, manganese steel and other alloys, ultimate recommendation likely to be made for a steel to show a tensile strength of 75,000 pounds per square inch minimum.

Resists High Stresses

The rivet-bolt is driven cold and, in tests with 1.6 per cent manganese steel and others with a maximum of 1.75 to 1.8 per cent manganese, high strength has been developed, while structural rivet steel units have far exceeded ordinary stress requirements. At points of higher stresses, special alloy rivet-bolts may be used. In recent tests at Columbia university, a stress of 109,000 pounds was used on specimens of rivet-bolted plates and even then the plates failed first, pulling out at the holes. For specific purposes the unit may be heat treated. The unit has also been tested for vibration, this being prevented by the locking nut and ribbed oversized shank, gripping into the punch hole. Use of this unit, it is claimed, will not tend to change present shop fabricating methods, either in regard to punching or size of holes. In weight, the rivet-bolt as compared with the ordinary rivet, is slightly heavier per unit. With a copper washer, the rivet-bolt has been used in the fabrication of large tanks.



Ribbed shank of the rivet-bolt is 1/32-inch larger in diameter than the punched hole where it is to be used, and when driven into the hole sets up a body-bound fit. The nut is spun on by hand and locked in place by a three-quarter turn

. . . . TESTED RODS

All Oxweld Welding Rod Must Pass These Rigid Tests

CHEMICAL ANALYSIS

Oxweld welding rod must contain the specified elements within the extremely narrow range of its patented metallurgical formula.

CLEANLINESS

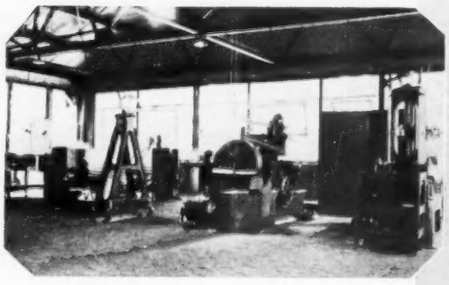
Every Oxweld welding rod must be chemically as clean and free from undesirable impurities as manufacturing ingenuity can make it. Samples from every heat undergo careful inspection under the microscope.

FLAME TEST

Samples from every heat are melted by a trained inspector who can tell instantly whether the rod contains any undesirable dirt, slag, seams or other inclusions or coatings.

WELDING TEST

Samples from every heat are used to make test welds on short sections of high strength pipe or test plates. Good penetration must be obtained easily and the weld metal must unite readily with the base metal.



PHYSICAL TEST

Samples from every heat must measure up to the minimum requirements of tensile strength, ductility and fatigue resistance. Since high ductility is an outstanding feature of Oxweld No. 1 High Test Rods, these rods must be high both in strength and ductility before they are certified by Oxweld Testers.

OXWELD NO. 1 - H.T. PATENTED
OXWELD NUMBER SEVEN
OXWELD NO. 21 - H.S. BRONZE PATENTED
OXWELD
WELDING AND CUTTING APPARATUS AND SUPPLIES

MEAN *TEST-WORTHY JOINTS*

Oxweld factory tests are only the first in a testing process that ends when Oxweld welding rods make clean, strong joints and win your "O. K."

Oxweld's ability to make rods that meet your strictest requirements comes from employing the best metallurgical skill to prepare and test formulas, from endlessly experimenting to find exactly the right raw materials, and from impartially testing rods in every stage of production and from every heat of metal used.

Such rigid control in manufacture is expensive, but it results in uniformity and high quality in Oxweld welding rods, thoroughly justifying the confidence of welding operators and managers alike in every part of the country.

There are Oxweld rods for every metal and alloy that can be welded. Using them will convince you of their quality.

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Unit of Union Carbide and Carbon Corporation

126 Producing Plants — UCC — 627 Warehouse Stocks

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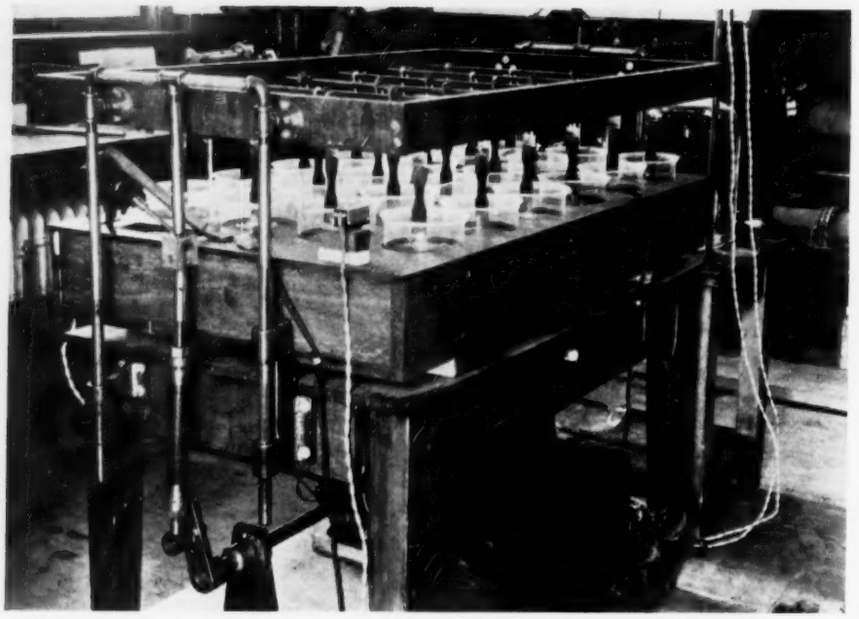


Fig. 1—Corrosion testing machine in which welded specimens are intermittently subjected to immersions in a corroding liquid

Investigates Corrosion of Welds in Specially-Built Testing Device

THE effect of corrosion in welded boilers, pipes, and containers for oil and chemicals is becoming so important that the research laboratories of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., are studying it with special apparatus. In welded structures of rustless steel, alloys, or monel metal this problem is vital. The results of these studies may tell engineers how to fabricate structures so that all parts will be uniformly resistant to rust.

In a weld of low-carbon steel corrosion may be expected to start in the zone where weld metal meets parent metal. At this point, according to the electrolytic theory of corrosion, a potential difference may exist which is responsible for an accelerated attack. Oxides and other heterogeneous particles, if present in the weld, tend to hasten corrosion by the formation of electrolytic cells. The soil corrosion of pipe lines is an example. A more homogeneous weld should be expected with coated welding wire than with bare electrodes since the coating resists the entrance of foreign elements.

To corroborate many facts already known on this subject and to uncover others, a special corrosion device has been built which greatly hastens the slow process of rust. In it the test specimens are subjected to intermittent immersions in a corroding liquid. The apparatus suddenly immerses the samples for a definite period, leaving them at rest, and then removing and exposing them to air for a definite period. They are moving only when being lowered or raised—a time which is a very small fraction of the cycle.

Samples are suspended from a rack by glass hooks, horse hair, or silk, as shown in Fig. 2 and a motor-driven crankshaft raises or lowers the rack as shown in Fig. 1. The driving motor is controlled by a timing device composed of a synchronous motor operating a contact, which causes the motor to periodically turn the crank shaft a half revolution. The timing can be set for any cycle of test operation.

Fig. 2 — The specimens are suspended from the rack by glass hooks, horse hair or silk. Following immersion, they are exposed to air for a definite period. Timing can be set for any cycle of operation

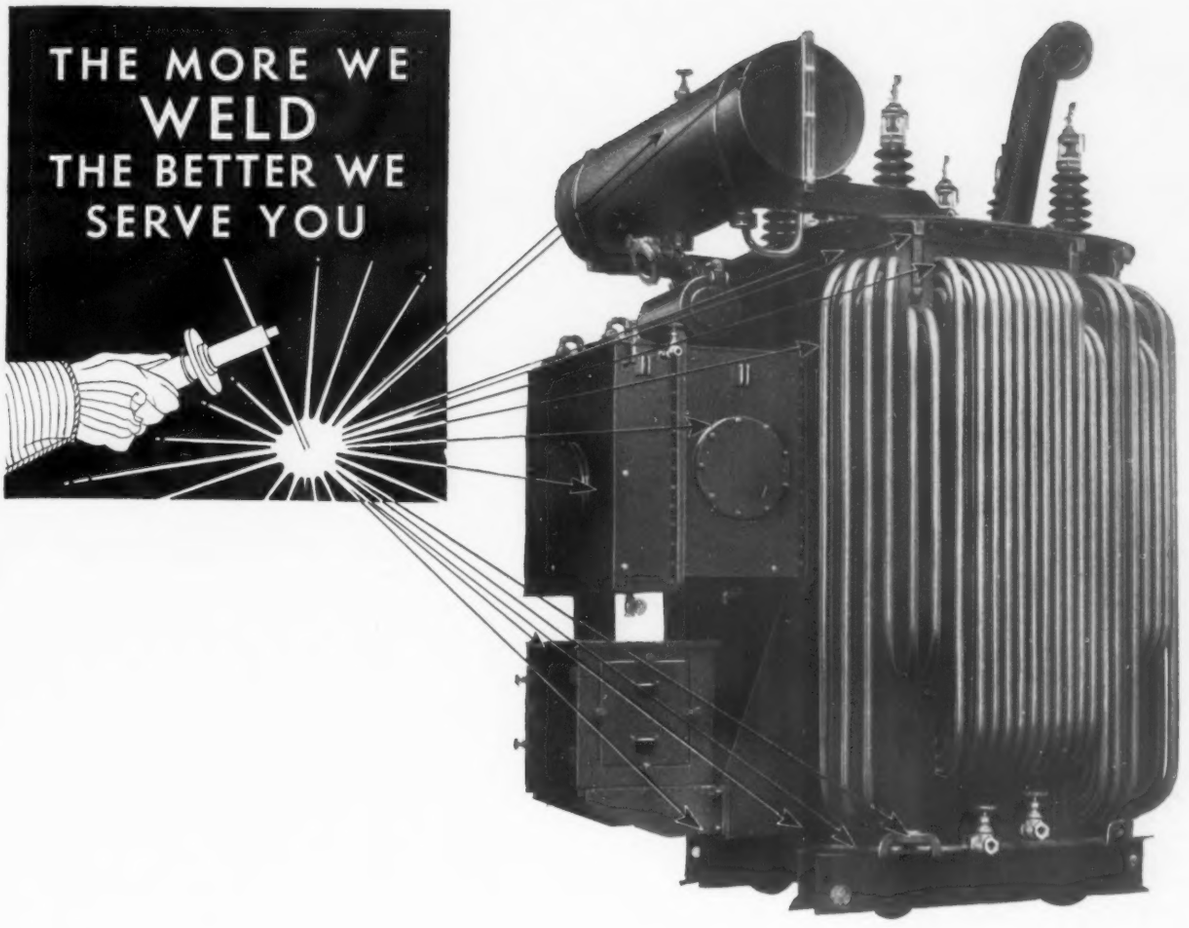
Announces Improved Sheet For Porcelain Enameling

Production of an improved enameling iron said to possess exceptional bonding qualities is announced by the American Rolling Mill Co., Middletown, O. This new sheet, to be known as "Crystal Etched," is made by a new exclusive process which, it is believed, will effect large savings for the porcelain enameling industry.

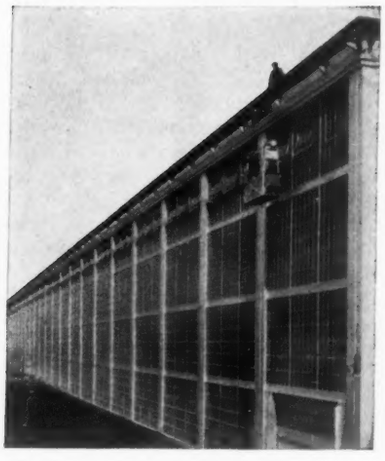
As the adhesion between the enamel and the metal will be strengthened uniformly, cull and rejection losses will be decreased and resistance to chipping and flaking will be increased. Reboiling behavior is claimed to be improved greatly and undesirable imperfections, such as black spots, will be reduced markedly.

The new special bonding sheet will be of the same uniform analysis as the company's regular grade of enameling iron and, it is stated, will give better all-around results with the usual enameling practice.

Believing the porcelain enameling industry is on the threshold of an age in which new and important applications are bound to develop, the American Rolling Mill Co. has devoted a large part of its research facilities to this development during the past two years.



An all-welded product - - in an all-welded building



GENERAL ELECTRIC is arc welding its power transformers because this method of construction assures oil-tightness, greater mechanical strength, improved appearance, and simplified design. It has invested a million dollars in an all-steel, all-arc-welded tank shop in which to build them.

This new building is especially indicative of General Electric's advanced welding-engineering practice. An all-steel structure was achieved by the use of steel pilasters and fascia plates instead of the typical brick walls. Fifteen hundred tons of steel and 4600 linear feet of welding were used in the frame alone.

These, and hundreds of other examples, are the reasons why we refer to the district and local G-E offices as Arc Welding Headquarters—where industrial men may tap the foremost source of welding experience and obtain, on one order blank, from one dependable manufacturer, all the arc-welding equipment required for any job.

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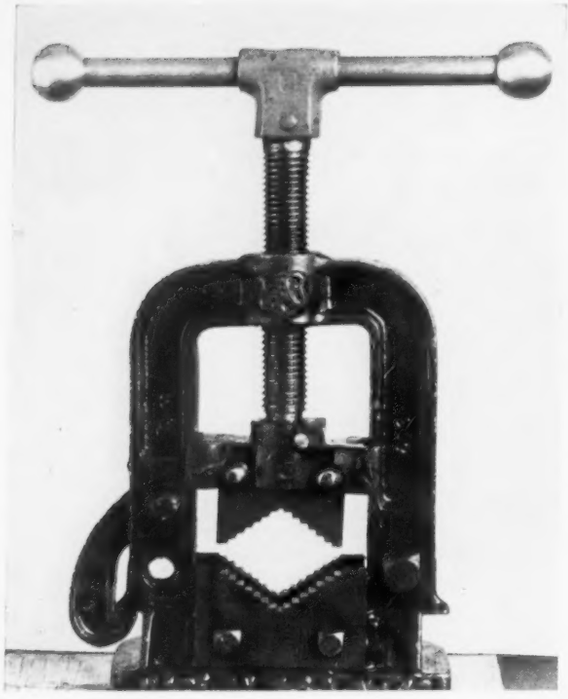
GENERAL ELECTRIC



Standard type of pipe vise. All the heavy working parts are made of steel; the jaws of especially selected stock steel, heat treated

Large Uses of Steel In Small Ways

222nd Article ◆ Pipe Vises

APPROXIMATELY 900 tons of steel and malleable iron castings are consumed annually in the manufacture of hinged heavy-duty pipe vises. While this tonnage represents only part of the metal needed in the production of all vises, it closely approximates the requirements for this type of vise used in pipe cutting and fabricating.

In the typical hinged pipe vise about one-third of the metal is machine and tool steels, while the remainder is malleable iron castings. The heavy working parts are steel.

Main parts of the pipe vise are top, base, hook, handle and screw, and slide. The jaws are the most important section, being made of especially selected tool steel, milled, drilled and heat treated. The bar and ends are of machine steel as is the screw, being worked from steel bars, in automatic screw machines. Malleable iron parts include the frame and tee, hook, slide and base. The average weight of a vise taking pipe from ⅛ to 4½ inches diameter is about 27 pounds.

While constructed for heavy work, the vise is comparatively light, the I-beam structure throughout providing maximum strength, and the locking hook designed to withstand reasonable working pressures. On most types of pipe vises the one-piece slide permanently holds the upper jaw in place which prevents it from being detached and lost. This slide runs on the outside of the frame, tending to assure smooth and even operation.

All parts are interchangeable on most vises and a flat extension base at the rear permits easy access to bolt heads. The base is drilled to fit standard portable vise stands, and also can be mounted on practically any table or bench, there being no front apron. Maintenance of firm gripping surfaces indefinitely is the most important factor in construction and for this reason the best tool steel for the jaws is required, and heat treated.

Edward B. Ashworth, Bethlehem Ship Building Corp., Quincy, Mass., recently was elected chairman of the Boston chapter, American Society for Steel Treating. Other officers include the following: Vice chairman, E. L. Bartholomew, metallurgist, United Shoe Machinery Corp., Beverly, Mass.; and secretary-treasurer, Howard E. Handy, metallurgist, Saco-Lowell Shops, Biddeford, Me.

To Weld Plates For Dam in Field

CONTRACT for the fabrication and installation of the welded steel plate outlet pipes for the hydraulic power and flood control tunnels at Hoover dam, recently awarded to the Babcock & Wilcox Co., New York, by the department of the interior (STEEL, July 18, p. 54), involves such unusual features as the fabrication of the largest diameter pipes ever constructed, using plates about 3 inches thick, and the erection of a fabricating plant, built solely for the purpose, on the federal reservation near the dam. Total length of the pipes to be constructed exceeds 12,000 feet, with variations in diameter from 8½ to 30 feet.

Too Large To Move by Rail

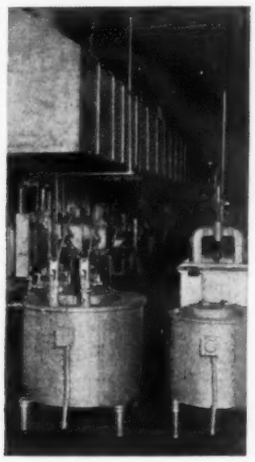
The large diameter of the pipe sections precludes their being transported over any existing railroad lines and necessitates erection of the fabricating plant on the site. Each section of 30-foot pipe will require six steel plates of the largest size that can be rolled with present steel mill equipment. Weighing about 25 tons, each plate will measure approximately 12 x 35 feet, and two such plates are all that can be shipped from the steel mill to the fabricating plant on one railroad car. Three of these plates after being formed and welded together, will make one piece of 30-foot diameter pipe about 12 feet long, and two pieces joined together in the fabricating shop will constitute one section, weighing about 150 tons.

From the field plant the sections must be transported to the rim of the canyon on carriages comparable in capacity with those used for moving the heaviest artillery or coast defense guns. From this point each section will be transported across the canyon and lowered 1000 feet by cableway to the entrances to the several tunnels. The cableway will have more than double the capacity of any heretofore used for such purposes and will have a span of 1400 feet supported on towers 150 feet high.

All sections of pipe will be subjected to various types of tests, including X-ray examination of welded seams. An interesting sidelight of this work is that the quantity of X-ray film which will be used for the testing will exceed the total of all X-ray films hitherto produced for industrial purposes.

The contract, involving an expenditure of $10,908,000, is the second largest of its kind ever awarded by the department of the interior, and makes available to the steel industry about 55,000 tons of plate steel, largest tonnage actively considered so far this year.

Making the Most of



METHODS AND MATERIALS

NONCORROSIVE 18-8 steel is being used increasingly in submarine repairs, replacing other steel alloys sometimes employed in original construction. Chromium-nickel sheets for such use must be rolled from ingots, slabs or billets made by the crucible or electric furnace process, and be free from pipes, seams, blisters and other injurious defects. Sufficient discard must be taken from each billet to insure freedom of such defects. Sheets may be ground to remove defects providing such grinding does not reduce the thickness of the plate or sheet below the specified thickness. For this grinding iron-free abrasives are used. In contact with other iron-base or aluminum-base metals corrosion-resisting sheets when in contact with salt water, spray or atmosphere must not show progressive corrosion or pitting. Discoloration, staining or slight oxide film is sometimes permitted. In contact with nickel-base or copper-base alloys a slightly greater discoloration or oxide film is allowed. A chemical analysis of each melt is also furnished the inspector.

A GEAR manufacturer recently discovered that control devices on his continuous normalizing furnace were incapable of increasing the heat from no-load to full-load in the time required for trays of forged gear blanks to pass through the heating chamber when the furnace was started up after a shut down. Gears in the first few trays would not be up to standard, although uniform results were obtained when the furnace was operating steadily. Similar results were found at the end of a production run. To avoid rebuilding the pyrometric control, the manufacturer adopted the practice of beginning and ending each run with several trays of rejected forgings, thus assuring uniform conditions for the commercial work.

\$ \$ \$

Use of black magnetic oxide rouge for polishing specimens has become standard practice in the metallographic laboratory of a West Coast university. According to test, it is cheaper, cuts faster, and gives more perfect surfaces than any material so far tried. An apparent disadvantage, however, is the persistence with which its color remains on clothing, hands and equipment. Black magnetic rouge is obtained by a patented process of precipitation and consists of 99 per cent Fe_2O_4. In the tests, a quantity of the rouge was suspended in water and used as final polishing medium without levigation.

\$ \$ \$

A new material developed in Germany for absorbing vibrations in machinery and structures now is being manufactured in the United States. This product is obtainable in sheets from ¼ to ½-inch thick and up to 3 feet square. It resembles soft rubber, but is practically incompressible and clings to metals and other solids. It is not affected by oil, but somewhat affected by long exposure to water and is suitable for use up to 140 degrees Fahr. Recommended load carrying capacity is between 10 and 30 pounds per square inch.

\$ \$ \$

Durability of plated coatings on zinc die castings is dependent largely on their thickness. Plated coatings for outdoor exposures should be at least 0.0003-inch thick. In the past and to a certain extent today, it is not uncommon to find deposits of nickel as thin as 0.00005 inch.

\$ \$ \$

A new method of applying tantalum carbide tips to cutting tools has been perfected in which an insert of molybdenum metal is brazed between the steel shank and the carbide tip. Since molybdenum has almost the same coefficient of expansion as the tantalum carbide, the inserts effectively prevent strains being set up or cracks developing in the cutting tips as tools cool after the brazing operation. Strains which may develop between the molybdenum insert and the steel shank are entirely absorbed by the molybdenum because of its great ductility. Inserts are particularly desirable in tools where the carbide tips are long, thin or of unusual shape; or where unusually severe conditions of operation are expected. In small tools, the tantalum carbide tip often is mounted on a shank of molybdenum.

\$ \$ \$

A two-wheel hand truck recently placed on the market for handling boxes, crates, barrels and similar containers, has a nose to which a hard surfacing material has been applied to provide greater wear resistance.

A PRODUCER of gas refrigerators has analyzed causes for leaks in welded refrigeration units. Some leaks occur because the tubing was not up to specifications. Some leaks develop because of distortion in the galvanizing bath. But the greatest cause of leaks is the faulty technique of new welders who have not yet developed the requisite amount of skill. Incidentally, experience at this plant is that when the completed, welded refrigeration units are tested on the production line with air at 1000 pounds pressure, 50 per cent of them leak and have to be repaired. At this plant it also is accepted as impossible of attainment to have each refrigeration unit 100 per cent tight, so it is regarded as axiomatic that occasionally leaky units will go out into service. Such leaky units always prove faulty within a month or two of going into service and then are sent back to the plant for repairs.

THESE TUBES KEEP YOUR BOILER GOING

Smooth, steady operation is profitable operation. Continuous performance at full efficiency is the real measure of success. Whatever helps to maintain it, will reduce costly intervals of "time out" for repairs, and avert the likelihood of schedules being balked or confused.

NATIONAL-SHELBY Seamless Boiler Tubes, for Locomotive, Stationary and Marine Boilers, by their unusual strength, ductility, general durability and high resistance to corrosive attack, not only cut down replacements, but give maximum assurance against interruptions to service—they keep your boiler going. Ask for Bulletin No. 12, discussing the advantages of NATIONAL-SHELBY Seamless Boiler Tubes.

NATIONAL TUBE COMPANY • Pittsburgh, Pa.
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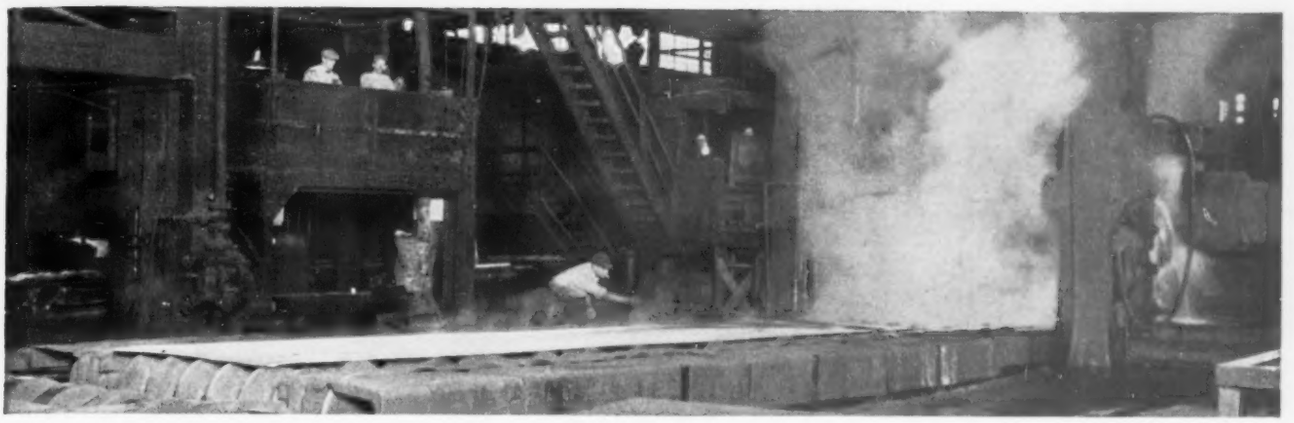
NATIONAL SEAMLESS

BOILER TUBES SAFE ENDS SUPERHEATER TUBES CONDENSER TUBING ARCH TUBES SUPERHEATER PIPES STAY-BOLT MATERIAL



PROGRESS IN STEELMAKING

POWDERED metallurgy of recent development is broadening its field of application. It embodies iron, plain and alloy steels and various other metals in powdered form which may be used singly or mixed in desired ratios and pressed into shape without oxidation or scrap losses. After compressing, the powdered metal is sintered at a temperature considerably below the melting point. Such parts as valve tappets, welding rods, tool bits for high-speed machines, etc. are being made from this material.

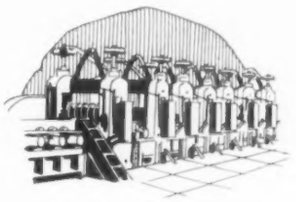
♦ ♦ ♦

Quantitative analysis of alloying elements in steel within an accuracy of 0.5 per cent is made possible by a spectroscope, known as a "steeloscope," recently developed in England. The steel specimens are used as the poles of an electric arc. The light from this arc is diffused by an optical system and prisms into spectrum lines. Visual examination of characteristic spectrum lines shows the presence of such elements as nickel, chromium, manganese, molybdenum, titanium, cobalt, tungsten, copper, tin, cadmium and vanadium and discloses their approximate proportion when present in the steel.

RETAINING the heat in open-hearth bottoms during periods when the furnace is idle is accomplished at one open-hearth shop by the application of a coat of tar. The same end is attained in another open-hearth department by covering the bottom with a layer of coke breeze when it reaches a temperature of about 500 degrees Fahr.

♦ ♦ ♦

Resistant to pitting and corrosion under kinetic strain, is one of the characteristics of a stainless, austenitic metal recently developed in Germany for steam turbines. The metal includes about 15 per cent chromium, 1.3 per cent nickel and 2 per cent tungsten.



ACCURATE speed indication of a continuous bar mill in the Great Lakes district has been obtained by equipping each main driving and edger motor with an electric tachometer. The unit consists of a small generator geared to the shaft of the main motor and a voltmeter which is calibrated in revolutions per minute of the bar mill rolls.

♦ ♦ ♦

Two continuous pair and pack heating furnaces of the walking beam type now being installed at a plant in the Pittsburgh district have two new features. Each furnace is built with three conveyors and each conveyor is actuated independently by hydraulic power. The units are over and under fired with coke oven gas and maintain a smoky atmosphere to obviate scaling.

♦ ♦ ♦

A steel plant, which rolls beams but not plates, has evolved a novel method of obtaining, at nominal expense, plates for miscellaneous purposes around the plant. It has installed a gas-cutting machine of the radiagraph type for removing the webs from beams. This operation, in the case of large beams, leaves plates from 12 to 30 inches wide. While such plates are not eligible for sale, having been rolled in only one direction, whereas a commercial plate has been rolled in both directions—they are entirely serviceable for miscellaneous plant uses. The beams thus converted into plates, are rejects or odd lengths. Under former practice they were relegated to the open-hearth furnaces for remelting.

♦ ♦ ♦

Employing an electric hoist and bucket for charging bolts into a furnace is saving a boltmaker in the Pittsburgh district $2000 annually. Hoisting and charging a 250-pound batch is accomplished automatically. Former practice involved piling the stock on the floor and shoveling it into the furnace by hand. Hoisting equipment has reduced the charging time from 10 minutes to 1 minute and reclaimed floor space.

♦ ♦ ♦

Total dissolved solids in boiler feed water now can be ascertained rapidly and conveniently by the use of a newly designed hydrometer, thus facilitating the determination of concentration and blow-down requirements in steelworks power plant practice.

ANNEALING high-speed steel after forging in pit-type electric furnaces is being accomplished at one plant in 24 hours, which represents a reduction of 36 hours compared with former practice. Sulphur-free coke is charged with the work and provides a nonoxidizing atmosphere.

NEW BOOKS WORTH READING

SCIENCE ◆ ECONOMICS ◆ BUSINESS

Students of Engineering Given New Text on Tools

Economics of Tool Engineering; cloth, 203 pages, 6 x 9 inches; published by McGraw-Hill Book Co. Inc., New York; supplied by STEEL, Cleveland, for $2.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

Jig and fixture design forms the subject of this work, which is designed for use as a text book for the engineering student who has had practice in pattern, foundry and machine shop.

The authors are Alexander P. Gwiazdowski and Chester B. Lord. The former is assistant professor of shop practice in the college of engineering and architecture of the University of Michigan; the latter is associate editor of *American Machinist.* Assistance of other authorities on the subject was obtained in rounding out the volume and supplying needed details in text and illustration.

◆

Textbook on Enameling Gives Advanced Technique

The Advanced Technique of Porcelain Enameling, by J. E. Hansen, research engineer, Ferro Enamel Corp.; cloth, 310 pages, 5½ x 8¼ inches; published by the Enamelist Publishing Co., Cleveland; supplied by STEEL, Cleveland, for $3.50, plus 15 cents for postage; in Europe by the Penton Publishing Co. Ltd., Caxton House, London.

To meet the demand for men trained in modern porcelain enameling, the Ferro Enamel Corp., several years ago published the first textbook devoted to the application of wet process enamels, the title of this book being "The Technique of Vitreous Enameling." For the past few years that book has been used as the textbook of a semiannual school for enamelers conducted in Cleveland by the Ferro corporation.

In the meantime, the enameling industry has reached an adult age, and men are interested in production, control methods and wage incentive ideas, thus the original textbook and school have served their purpose. To meet the new need, therefore, the new volume has been prepared. It incorporates all of the features of the early edition, and, in addition, contains many chapters on more advanced lines.

The book is well illustrated and information is made readily accessible by liberal use of marginal subheads. The text of 17 chapters is divided into two parts, Part I dealing directly with enameling processes, and Part II with control methods and management.

Subjects discussed in Part I are: Selection and fabrication of the base metal for enameling; preparation of metal surfaces; enamel mill room practice; mill additions, colors and color oxides; application of enamel; drying and brushing; burning; inspection; decorative effects; and shop troubles. Part II includes: Process control methods; enamel shop management; wage incentives; accounting and budgeting as an aid to shop management; development of enamel furnaces and refractories; development of enameling equipment; and useful data.

◆

Producing and Applying One of Rare Metals

Beryllium, Its Production and Application; cloth, 331 pages, 6 x 9 inches; published by Chemical Catalog Co. Inc., New York; supplied by STEEL, Cleveland, for $10, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

This is a translation by Richard Rimbach and A. J. Michel of *Beryllium Arbeiten,* compiled by the Siemens Konzern. It contains reports exclusively devoted to beryllium and is a comprehensive report of work on the subject of beryllium carried on since 1923 by the Siemens Konzern.

The results of five years' work in this element are presented, with 10 reports from the electrochemical division of Siemens & Halske A. G and 12 reports from the research laboratory of Siemens Konzern and numerous other contributions.

Those interested in this remarkable element may find much of interest in these reports, though they are not to be considered as final.

◆

How Foundry Work Is Done in England

Foundrywork and Metallurgy, Vol. I; edited by R. T. Rolfe; imitation leather, 248 pages, 5 x 7¼ inches; published by Isaac Pitman & Sons, London and New York; supplied by STEEL, Cleveland, for $1.75, plus 15 cents postage and in Europe by the Penton Publishing Co. Ltd., Caxton House, London.

This is the first of a series of textbooks covering many phases of foundry operations by numerous authorities on foundry practice in England. Vol. I is devoted to detailed information on the fundamentals of patternmaking, molding and coremaking and machine molding. Other volumes, based largely on this preliminary work, will be published later.

The first section, devoted to patternmaking, is by William G. Walker. Molding and coremaking, the second section, was prepared by J. Laing, foundry superintendent, W. H. Allen, Sons & Co. Ltd., Bedford, Eng.

The third section, by A. S. Beech, past president, Foundry Trades Equipment & Supplies association, discusses various types of molding machines available. The work, of course, represents overseas practice, but the fundamentals involved are the same in foundries the world over. Due to the wide scope, each subject is treated briefly, but concisely.

◆

How Personnel May Be Administered in Industry

Applied Personnel Administration, by J. E. Walters; cloth, 338 pages, 6 x 9 inches; published by John Wiley & Sons Inc., New York; supplied by STEEL, Cleveland, for $3, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

Seeking to stress the practical applications of the subject of personnel rather than the theoretical side, the author has prepared a text for college students and those interested in personnel work and also a reference work for industrial and business concerns.

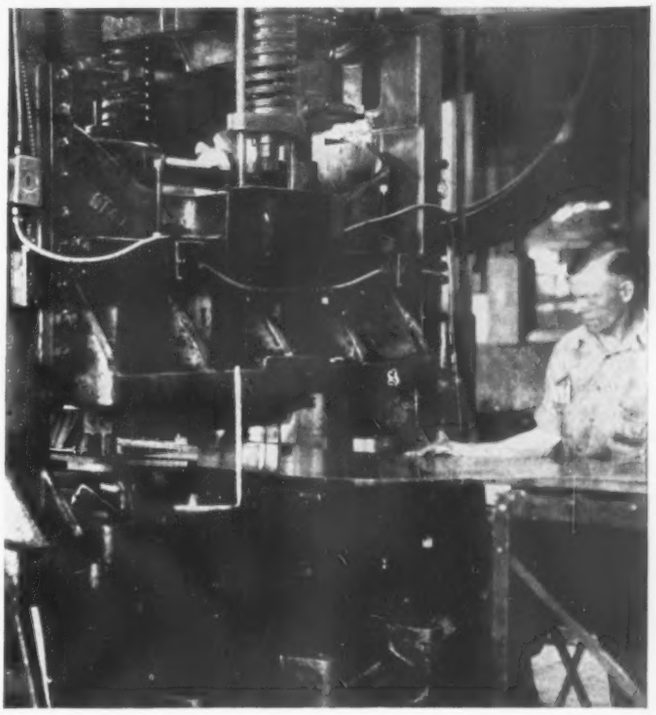
The author gained the basis for his study in visits, conferences and detailed inspection of the personnel department of about 75 large and small industrial and business concerns. In many instances he went through the entire personnel procedure to the extent of taking training in the positions to which he was assigned after the examinations.

Each chapter is followed by a review summary, a list of special reports and a number of selected references to aid in further reading.

Punching

In punching, as in other fabricating operations, Youngstown Sheets have consistently effected worthwhile manufacturing economies for thousands of fabricators.

The picture at the right shows a punching operation in the manufacture of one of the thousands of products which are constantly demonstrating the outstanding advantages of Youngstown Sheets in all fabricating operations.



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Don't let a rejection pile in your shop drain the expected profits to which you are entitled. Let Youngstown show you a way to keep your waste to a minimum.

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One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

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SHEETS FOR EVERY PURPOSE .. INCLUDING YOURS

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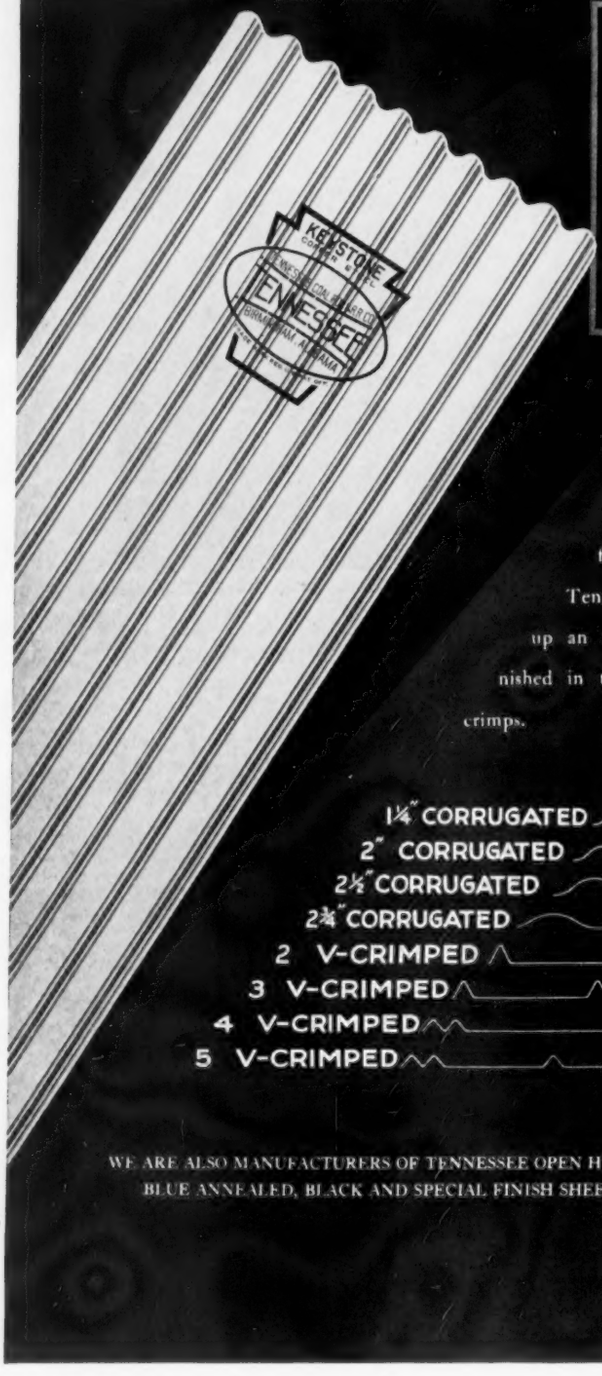

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4 V-CRIMPED
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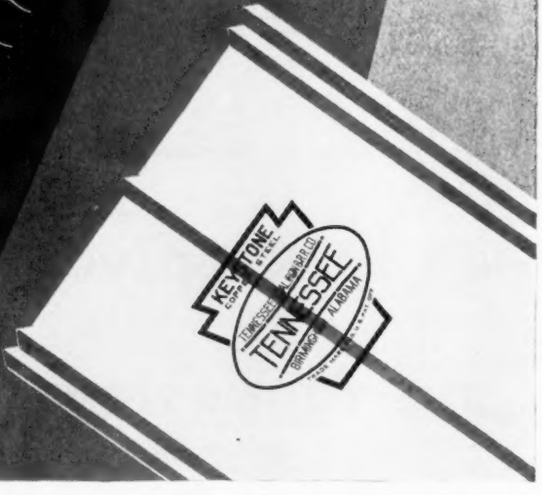


TENNESSEE COAL, IRON & RAILROAD COMPANY

General Offices: Brown-Marx Building, Birmingham, Ala.

Subsidiary of United States Steel Corporation

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
MINNESOTA STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Portable Drill Powered by Gasoline Motor

Guibert Steel Co., Pittsburgh, recently placed on the market a gasoline portable drill, capable of drilling, reaming or countersinking the heaviest plates and sections in the field or shop. The unit can be transported by a crane, rolled along on its rollers or, when lightened, carried by three men. Auxiliary wheels and axles can be furnished for towing.

Shown in the accompanying illustration, the machine has a variable spindle speed of 250 to 600 revolutions per minute, drilling holes 1½-inch diameter and smaller through 12 inches of solid metal. Power is provided by a 6 horsepower gasoline motor. Cooling fluid is applied at the drill point from a tank mounted on the machine. A simple system of weights and counterweights give it the necessary weight required for drilling large holes.

When in use the operator by sitting or leaning on the end of the 5-foot handle exerts tremendous pressure on the drill point. In addition to rollers, the frame rests on adjustable legs, which permits drilling a vertical hole in materials of different thickness.

◆

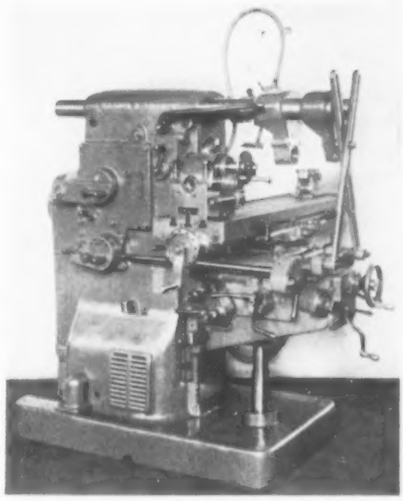
Introduces New High-Speed Milling Machines

Brown & Sharpe Mfg. Co., Providence, R. I., is introducing a new line of high-speed milling machines for economical milling with all types of cutters on a great variety of materials. These plain and universal units, of the column and knee type, are manufactured in both Nos. 2 and 3 sizes. A universal machine is depicted in the accompanying illustration.

Many unusual features are included in the construction of these high speed machines. One particularly affecting operating economy is that the motor only runs when the machine is actually cutting. No clutch is used, as the starting lever throws the switch controling the motor and in the down position also operates a powerful spindle brake.

EXTRA long Weldon end mill is shown at the left. The Weldon Co. also is marketing end mills having hollow-ground lips as shown in the diagram above. Both may be obtained with left or right-hand cut and with left or right-hand spiral

Available at both front and rear operating positions are every power movement, hand adjustment and the power fast travel control. The hand adjustments at the rear of table are fitted with easily read graduated dials and a safety device is incorporated so that the power feed cannot be engaged while using hand adjustments. The longitudinal hand control is of exclusive design, incorporating a safety feature and giving the choice of long leverage by using the crank, or, the advantage of "rimming" the handwheel for delicate adjustments.



Universal milling machine manufactured by Brown & Sharpe Mfg. Co.

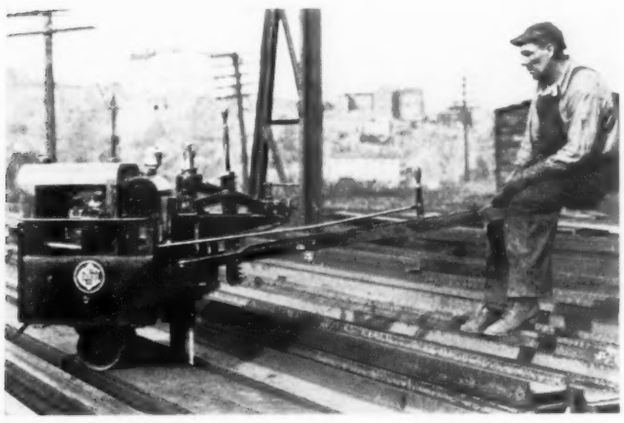
Thirty-two changes of spindle speed are provided, ranging from 20 to 1300 revolutions per minute. A wide range of back gear speeds is available, 16 changes to 238 revolutions per minute.

◆

Manufactures End Mills with Singular Features

Weldon Tool Co., 1426 West Third street, Cleveland, is manufacturing an extra long type of end mill, shown herewith. It was designed primarily for deep pockets on dies but it equally is adaptable to a number of other cases where unusually narrow deep pockets or slots must be produced economically.

For handling milling machine jobs where unusually high speeds and feeds must be combined with clean cutting and freedom from "chattering," the company is marketing end-mills having hollow-ground lips, as shown in the diagram at right in the illustration. It is claimed that these end-mills not only retain their sharpness longer but also that since the "hook" effect of the hollow-ground lips curls up and ejects the chips more efficiently, a cleaner finish and faster removal of metal can be ac-



GASOLINE portable drill developed by Guibert Steel Co. for drilling, reaming or countersinking plates and sections. An extension permits the rollers to ride the edges of flanges when it is necessary to drill webs of H-sections

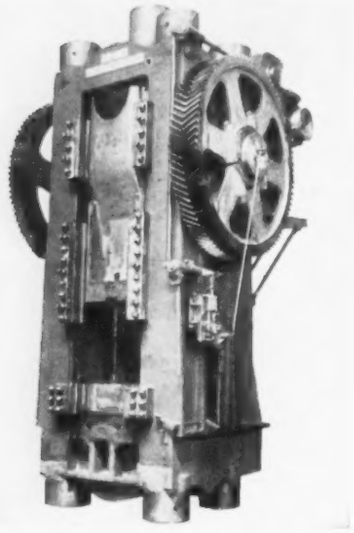
complished. These mills are supplied with left or right-hand cut and with left or right-hand spiral.

◆

Builds High-Speed Presses in Six Standard Sizes

Cleveland Punch & Shear Works Co., Cleveland, recently added a new line of all steel high-speed forging sizing presses which, for their capacity, are extremely compact. These units are built in six standard sizes ranging in capacity from 200 to 2000 tons pressure.

A safety device is incorporated and this is set at a predetermined ton-



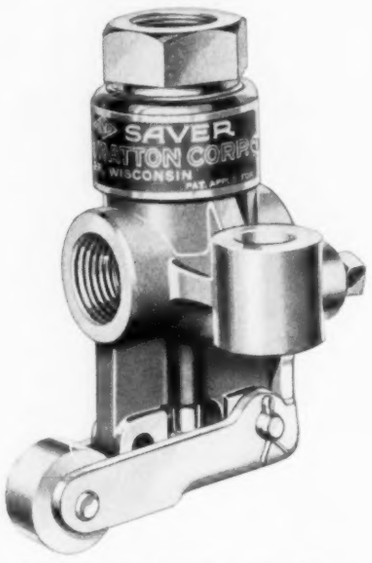
1800-ton press designed by Cleveland Punch & Shear Works Co.

nage so that should the press be loaded beyond that point, no damage will occur. As shown in the illustration the slide is jibbed at both top and bottom. Weight of the unit is 315,000 pounds, it has 17½-inch crankshaft frame bearings, 30½-inch crank pins and all the drive shaft and intermediate shaft bearings are of the roller type. Stroke is 12 inches, shut height of die space 29 inches, and the bed and ram measure 60 inches from front to back.

◆

Air Valve Provides Automatic, Intermittent Control

Briggs & Stratton Corp., Milwaukee, just has released for general sale a new air valve originally developed several years ago for its own plant purposes, and for the past year used experimentally in a number of plants in various parts of the country. The valve, shown herewith,



Leak-proof air valve introduced by Briggs & Stratton Corp.

supplies automatic, intermittent control of compressed air blasts for ejecting work, keeping dies and tools clean, and other similar purposes. The valve is designed for punch presses and on other machine tools where drilling, broaching and reaming operations require controlled air blasts to save tools, increase efficiency, permit greater accuracy and promote higher production speeds.

Precision built, the valve, seat and spring are of stainless steel. The air inlet bushing is of brass. An extra long guide is lined with a special graphited bronze bushing, and reversible operating arm, roller and bearing pins are of hardened steel.

◆

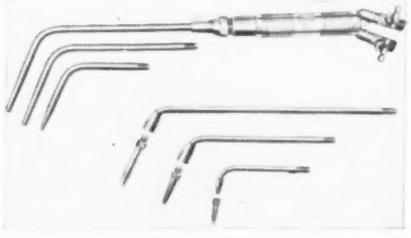
Speed Reducer Units Designed For Standard Motors

Millholland Corp., Indianapolis, recently developed a series of motorized speed reducers, a feature of which is the use of a standard motor without special bearings, special shafts or end bells, and yet obtain the equivalent, in space saving, of a special geared head motor. This is accomplished by bolting the reducer case directly on the machined register of a standard motor end bell as shown in the accompanying illustration.

Millholland speed reduction unit may be bolted to standard motor

These reducers are of the worm and worm gear type with the worm and worm gear shaft mounted in antifriction bearings. The worm is supported in such a manner that no unusual strain is induced in the motor bearings. The design provides for an outboard foot support to the reducer. Hollow leveling thimbles, through which the reducer holddown screws are placed, are provided in the outboard support feet to accommodate variations in the center height of the motors. The output shaft can project in any of four positions in two planes. This position may be changed in the field without the use of special tools.

A number of different case sizes of



Welding torch type HMS marketed by Alexander Milburn Co.

the same basic design are offered. These are made to fit all standard motor frame sizes from the ¼ to the 10 horsepower size, with maximum reduction in most cases of 60:1.

◆

Torch Recommended for All Types of Welding

Alexander Milburn Co., 1416-1428 West Baltimore street, Baltimore, announces that it has placed on the market an entirely new welding torch known as type HMS. The torch, shown in the accompanying illustration, is recommended for all types of welding.

Copper, swaged welding tips usually are furnished but they may be removed from the torch handle and replaced by extensions of various lengths. These extensions are light, but unbreakable nickel-silver tubes utilizing Milburn standard welding tips. Extensions also are interchangeable with various makes of torches.

Steel Holds Stronger Hopes for Gain in Fall

Continued Mediocre Demand Is Subordinated to Undertone Improvement Nears—Ingot Rate Up Point—Low Users' Stocks a Strong Point

EAGER to invest the early fall with hopes for recovery, the iron and steel industry is disposed to discount another week of meager bookings and scanty inquiry as symptomatic of a condition that is destined to pass shortly.

So far as actual tonnage available to the mills for immediate rolling is concerned, the flow still is out. No federal work being up, structural awards the past week were light, totaling 5373 tons or less than half the weekly average for 1932. An order for 25 hopper cars by the Kansas City Southern to its own shops is the limit of railroad business.

Automobile production is declining. Hudson-Essex producing a new model, and Chevrolet, with an expanded schedule for July, are comparatively strong, but other manufacturers have practically concluded their runs on 1932 models. A fresh buy of flat rolled steel by Ford indicates further curtailment apparently pointing to a shutdown in August.

Nevertheless, the undertone of opinion, first noted a week ago, that the next major move will be upward is taking firmer hold, and producers are appraising the current unprecedented low demand and attenuated condition of consumers' stocks as insurance that the next 30 to 60 days will originate some improvement.

Even though it represents a belated resumption following the July 4 holiday, another gain of one point in the steelmaking rate, to 16-17 per cent, is a measure of encouragement. Pittsburgh, Youngstown and eastern Pennsylvania have put on more mills, and if a scheduled recall of workers in the Pittsburgh district this week eventuates the rate will cross 17 per cent on the way up.

Considerable significance is also attached to the Carnegie Steel Co. purchase, from the New York Central railroad, of 10,000 tons of scrap monthly for five months for its Youngstown and Farrell works. At least one other Pittsburgh district steelmaker is stocking raw material in anticipation of an upturn. Except Detroit, sentiment in scrap is better, and the recent wave of price declines has subsided.

For the second consecutive week, demand at Pittsburgh for pig iron shows slight expansion, and several foundries there plan to resume early in August. Pittsburgh wire makers note a tendency by jobbers to stock more wire products, and specifications to sheet mills are broader. Releases for bars to Youngstown mills have been better.

There are offsets, however, in further shrinkage in bookings of strip in all districts, and a sterile market for plates, coke and scrap, save for the Carnegie purchase. Tin plate mill schedules, long a strong point, are easing from 50 per cent to 40.

In isolated cases at Detroit, pressure is being exerted on prices, and if the invasion of the low price field by Essex touches off an automobile price war, this may be intensified. Otherwise, steel prices are generally accepted. One mail order house, a patron of foreign mills, is quoting higher prices on barbed wire and fencing in its latest catalog.

One user of sheet bars has withdrawn after encountering an unbroken front of $26, Pittsburgh, on an inquiry for 5000 tons. New extras on billets, slabs and blooms raise prices $2 per ton on some sizes.

For the first time in a number of weeks, the various indexes of STEEL are in a static condition. The iron and steel composite is unchanged at $29.46, finished steel at $47.71, and scrap at $5.96.

Composite Market Averages

	July 23	July 16	One Month Ago June, 1932	Three Months Ago April, 1932	One Year Ago July, 1931	Ten Years Ago July, 1922
Iron and Steel Composite	$29.46	$29.46	$29.54	$29.75	$31.05	$37.50
Finished Steel Composite	47.71	47.71	47.64	47.62	48.68	53.74
Steelworks Scrap Composite.....	5.96	5.96	6.62	7.76	8.70	14.87

Iron and Steel Composite:—Pig iron billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	July 23, 1932	June 1932	April 1932	July 1931
PIG IRON				
Bessemer, del., Pittsburgh	$15.76	15.95	16.76	18.26
Basic, valley	14.00	14.50	15.00	17.00
Basic, eastern, del., eastern Pa.	14.00	14.50	15.00	16.75
No. 2 foundry, del. Pittsburgh	15.76	16.01	16.26	18.26
No. 2 foundry, Chicago	15.50	16.00	16.00	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.00
**No. 2X, Eastern del. Phila.	14.76	14.76	15.66	17.51
Malleable, valley	14.50	14.50	15.50	17.00
Malleable, Chicago	15.50	16.00	16.00	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	27.04
Gray forge, del. Pittsburgh	15.63	15.63	16.13	17.63
Ferromanganese, del. Pittsburgh	73.24	74.99	80.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsvile, furnace, ovens	2.00	2.00	2.25	2.40
Connellsville foundry, ovens	3.00	3.00	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	27.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	July 23, 1932	June 1932	April 1932	July 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.70	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
†Sheets, No. 24, hot, ann., Pitts.	2.20	2.20	2.20	2.40
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.85	2.90
Sheets, No. 10 blue anneal. Chi.	1.85	1.85	1.85	2.00
†Sheets, No. 24, hot ann., Chi.	2.35	2.35	2.35	2.55
Sheets, No. 24 galvan., Chi.	3.00	3.00	3.00	3.00
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.85
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$8.25	9.00	10.20	10.50
Heavy melting steel, eastern Pa.	6.25	6.25	7.20	8.55
Heavy melting steel, Chicago	4.75	5.60	6.55	8.50
No. 1 wrought, eastern Pa.	6.25	6.25	9.50	9.75
No. 1 wrought, Chicago	4.25	4.75	5.85	8.25
Rails for rolling, Chicago	6.75	7.75	8.90	10.50

Sheets

Prospects Appear for Improvement in Operations—Ford Expected to Issue More Releases

SHEET PRICES, PAGE 43

Pittsburgh—A slightly better flow of orders has developed from stovemakers, jobbers, and users in the western oil fields. The opinion is growing that specifications before another month has elapsed will raise sheet mill operations over the present rate of 17 per cent. Some good orders last week were for stove elbows and mechanical burners and heaters. Automotive sheets are in lighter demand. Galvanized is fairly firm at 2.85c; and heavy hot-rolled, 1.55c. Cold-rolled sheets are 2.25c and 2.75c, depending upon gage. One sheet mill in this district is rapidly clearing up its unfilled business preparatory to closing.

New York—Sheet demand appears at a virtual standstill, with sellers reporting sales at as low a point as any time this year. Meanwhile, prices are nominally unchanged.

Philadelphia—Light sheet buying in the past week included possibly two or three carlots of autobody sheets for a local manufacturer. Prices are unchanged.

Cleveland—Sheet mill operations here for July will be 15 to 20 per cent lower than in June. The current market is passive, with business insufficient to create price resistance. In electrical sheet lines demand is spotty; some refrigerator manufacturers still are specifying, but shipments in general are slowing. Barrel manufacturers are operating one to two days a week, and are placing fewer orders than in June. The Fisher Body Co. here continues on a four-day week basis.

Cincinnati—Sheet mills in this district increased production in the past week, partly due to an accumulation of orders, and partly to moderate gains in releases from the automotive field.

Newport Rolling Mill Co., Newport, Ky., has booked 199 tons of pickled and oiled one-pass cold-rolled box-annealed sheets for Mare Island navy yard, San Francisco, at $14,655, delivered.

Chicago—Sheet specifications are spotty and generally unimproved. Mill operations have increased moderately since early July, currently averaging around 15 per cent. Prices are untested but are nominally unchanged. With the resumption of operations of some manufacturing plants that now are idle, sheet producers look for a slight betterment in sheet demand over the next four to six weeks.

Youngstown, O.—Sheet mill operations in this district continue closely regulated to demand. The Ford Motor Co. is expected this week to release a fair tonnage of sheets and strip. The new terraplane Essex line is arousing hopes among certain sheetmakers. Chrysler engineers are said to be working at top speed to perfect a new 4-cylinder and a 6-cylinder line of models to be announced in the autumn.

Other sheet users continue to specify moderately. Prices seem to be the one element that arouses the least discussion.

St. Louis—Producers and distributors report sheet demand slightly more active than earlier in July. Automotive specifications have held up better than expected, and car repair shops are taking a fair amount of material.

Birmingham, Ala.—Sheet mills in this district are doing fairly well, and it is expected that there will be need for continued operations. Base prices have not been changed. Deliveries are prompt.

Consolidated Products Co. Inc., New York, dealer in used machinery and equipment, has moved its offices to suite 2008-14 at the same address, 15 Park Row. The new offices give larger facilities.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, del.	1.70c
New York, del.	1.90c
Birmingham, base	1.70c
Philadelphia, del.	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, del.	2.01c
New York, del.	2.05c
St. Louis, delivered	2.07½c
Birmingham	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.20c
Gary, Ind. Harbor, base	2.30c
Chicago, del.	2.35c
New York, del.	2.55c
Philadelphia, del.	2.51c
Birmingham, base	2.35c
St. Louis, del.	2.57½c
San Francisco, c.i.f.	2.85c

GALVANIZED NO. 24

Pittsburgh, base	2.85c
Gary, Ind. Harbor, base	2.95c
Chicago, del.	3.00c
Philadelphia, del.	3.16c
Birmingham, base	3.00c
St. Louis, del.	3.22½c
San Francisco, c.i.f	3.50c

AUTOMOBILE NO. 20

Pittsburgh, base	2.80c to 2.90c

FURNITURE

*Pitts., No. 10 heavy	2.65c
Pitts., No. 20 light	3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, del.	2.77½c to 2.82½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.25c
Gary, Ind. Harbor, base	2.35c
Chicago, del.	2.40c
Philadelphia, del.	2.56c
New York, del.	2.60c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
Philadelphia, del.	3.06c
New York, del.	3.10c
St. Louis, del.	3.12½c

TIN AND TERNE PLATE
Per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Long ternes, 24, unassort.	3.00c

Gary, Ind., base 10 cents higher

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)
F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95
(Per pound)	
Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00
(To Manufacturing Trade)	
Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.75c
New York, del.	1.87c
Boston, del.	2.00½c
Chicago, base	1.70c
Cleveland, del.	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.90c
Boston, del.	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
*Eastern mills	1.35c to 1.45c

IRON

Chicago, base	1.65c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
*Chi., billet	1.60c to 1.75c
Chi., rail steel	1.45c
Chi., rail steel, road, bridge and culvert	1.45c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Min. 10,000 lbs. of kind and grade

Pittsburgh	1.70c
Chicago, Buff., Cleveland	1.75c
Detroit	1.90c
Eastern Michigan	1.95c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel
Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills
Alloy Quality Bars, 2.65c, mill
(Differentials to various classes of consumers)

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo.	
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10 Cr.	0.45
2300	1.50	51.00 Cr. spring	0.20
2500	2.25	6100 bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Cr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .15 to .25 Mo.	0.50	9250 (rds.,sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide, Pitts.	1.45c to 1.50c
Do, Chicago	1.55c to 1.60c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. NewYork	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleve.	70, 10 and 5 off

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20- to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$32.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, boat, barge, Pitts.	2.75c
Track bolts, Chicago	3.50c
Do, standard, jobbers	73 off list
Tie plates, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off
Tire bolts ..... 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off
Headless set screws ..... 75-10 off
Upset, larger than 1 in ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do. less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	1.90c

Bars

Demand Holding Near Recent Low Level, with Automotive Buying Slightly Lighter

BAR PRICES, PAGE 43

Chicago — Bar specifications have been fairly steady. Automotive interests served by mid-western producers have made little change in operations and demand from that industry is off only moderately since a month ago. Specifications from farm implement builders and railroads still are sharply depressed, with little indications of immediate improvement. Bar iron is moving slowly, the market usually being 1.65c. Soft steel bars continue 1.70c, but this figure is untested. Rail steel bars are 1.50c.

Philadelphia—Bar sellers continue efforts to stabilize the market at 1.75c, Pittsburgh, for cut lengths in carlots. Demand is spotty, with 270 tons for the Bell telephone exchange here an important inquiry and 185 tons for roadwork a leading award.

Pittsburgh—Hot-rolled steel bars are quieter and firm at 1.60c, Pittsburgh. Demand for alloy steel bars is slightly better this week, with prices holding well. Orders for forging bars are not in evidence.

Youngstown, O.—Although needs of common steel bars users reflect the usual midsummer lull, there is sufficient volume of new business to insure a fair rate of operation. Alloy steel bar purchases are moderate. Concrete bar requirements continue light for this time of year.

Cleveland—Specifications for commercial steel bars for the automotive industry are lighter than 30 days ago. The general volume of business, however, has not changed appreciably in recent weeks; one maker notes a slight improvement, and purchasing by some small users who have been out of the market for several months. Bar shipments to the Detroit area have not been sufficient to engage vessel capacity since the first two weeks of navigation. Bars are steady at 1.65c, base, Cleveland.

Cold-Finished Demand Is At Year's Lowest Point

Cold Finished Prices, Page 43

Pittsburgh—The past week saw nothing to change the extremely low character of cold-finished steel bar specifications. Shipments have been practically completed on tonnage specified before June 30 for shipment during July under the old price classification. Within another week the market will present a unified appearance at a minimum of 1.70c. In many consuming lines vacations are now being taken and this factor has been a further restriction in limited demand.

Tin Plate Operations Expected To Rebound

Tin Plate Prices, Page 43

Pittsburgh—Tin plate operations declined last week for the second week, and were down about 10 points to 40 per cent. Two of the leading interests were operating at less than this average, but a large independent received releases the early part of last week which justified a continuation at about 82 per cent. There will be an improvement this week, probably to a 45 per cent average. Canners are holding their tin plate inventories to a minimum. The base price of $4.75 is nominal, but important users are not pressing for any revision.

Semifinished Steel Base Prices Steady

Semifinished Prices, Page 50

The movement of semifinished steel is near the low point of the year. An inquiry for 5000 tons of sheet bars, current at Pittsburgh recently, has been withdrawn apparently because the nearby valley consumer could not obtain a concession below $26, base. Prices of sheet bars, billets and slabs are firm at $26, Pittsburgh, Youngstown, O., and Cleveland, and some makers are holding billets at $27. Forging billets generally are $33, but bids recently showed some concessions below this price. A new card of extras on blooms, billets and slabs is being issued by some makers, section 6 x 6 to 10 x 10 inches formerly on the base price, now taking a $2 ton extra. Wire rods are $37, base, Pittsburgh.

Plates

Orders Still Small—Car Work Restricted—$1,000,000 Oil Refinery to Be Started Soon

PLATE PRICES, PAGE 43

Chicago—Business in fabricated plates remains slow and inquiries also are light. Some betterment is looked for from the oil industry over the next several months, but the outlook for increased car building and car repair work is dull. The Globe Oil & Refining Co., Blackwell, Okla., is expected to start work in the near future on a $1,000,000 refinery. Plates continue nominally 1.70c, Chicago.

Philadelphia—Plates are holding fairly steady at 1.70c, Coatesville, Pa., in car lots, with demand spotty. Approximately 200 tons of tank work is reported pending for Taylor & Co. at Betzwood, Pa.

Cleveland—Plate bookings so far this month for one independent maker are slightly ahead of its June volume. The market, however, is quiet. Boilermakers have been buying little material recently. Plates hold at 1.60c, base, Pittsburgh.

Pittsburgh—Small orders rule in the local market and mill rollings are grouped infrequently. No barge work was closed in the past week, but prospects for awards remain fairly bright. Tank work is slow and the mills are finding little outlet in that direction except in some of the lighter gages where light plates or sheets can be used for movable tanks in the southwestern oil fields. The base price of 1.60c for plates is firm.

Contracts Placed

325 tons, corrugated culverts for Whippel pumping plant, Ellensburg, Wash., reclamation project, to Beall Pipe & Tank Co., Portland, Oreg.

290 tons, Santa Clara county, California, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

200 tons, tanks, Taylor & Co., Betzwood, Pa.; bids reported asked.

110 tons, stand pipe, water commission, Shrub Oak, Yorktown, N. Y., bids July 25.

Unstated tonnage, 740,000-gallon tank, navy, Mare Island, Calif.; bids Aug. 10.

Railroads

Rail Orders at Zero and Track Fastenings Held to Low Level —Repair Needs Give Hope

TRACK MATERIAL PRICES, PAGE 43

Chicago—Releases of track fastenings recently have been moderately heavier, while the rail market has settled into its former inactivity. Local rail mills have practically completed rolling of tonnage released recently by the Pennsylvania railroad and no additional business is in immediate prospect. Repair work by most carriers continues extremely light and purchases of parts are unimproved. No inquiry for cars or track material is pending and prospects for improved activity in such purchases remain indefinite. Railroads are making only necessary repairs to keep equipment needed immediately in condition to operate and this situation leads mills and car builders to believe that better activity is only a matter of time.

Pittsburgh—There is little of importance in specifications by railroads for finished steel products. Occasionally a small lot of spikes or other fastenings is placed but rail releases are difficult to obtain. The Pennsylvania railroad will not buy many tie plates or spikes to accompany its release of 20,000 tons of rails which will be shipped next month. Most of these rails are for stock as a recent checkup revealed that the road had only 5000 tons of rails in stock for its 10,000 miles of trackage. New York Central railroad's order for fastenings still is deferred. Car buying is entirely absent. Light rails are nominal at $32. Prices on track materials are without change.

Car Orders Placed

Kansas City Southern, 25 hopper-bottom gondolas, to own shops.

Locomotives Pending

South Manchurian, Dairen, Manchuria, five locomotives; bids asked.

Wire Market Hopeful of Aid from Farm Upturn

Wire Prices, Page 43

Chicago—Shipments of wire products are at a low for the year. Producers base hopes for improved demand during August upon the favorable changes that have developed in some agricultural areas over the past several weeks. Although the increased returns available to raisers of livestock through the appreciation in these markets recently to a large extent will go for the payment of taxes and mortgages, it is believed that some increase in buying of wire products will develop. Demand for manufacturers' wire is seasonally dull and prospects for the near future are regarded as only slightly favorable. Prices are steady, continuing $2 in carloads for wire nails, 2.25c for plain wire and $38 for wire rods.

New York—Restricted building operations continue to curb demand for wire nails, which are holding nominally at $1.95, Pittsburgh. Plain bright wire also is moving slowly at 2.25c, Pittsburgh.

United States engineer at Memphis, Tenn., has awarded 1250 tons of 7/16th-inch wire strand to the Broderick & Bascom Rope Co., St. Louis. The Sheffield Steel Corp., Kansas City, Mo., was awarded 100 tons.

Pittsburgh—An improved condition in mid-western rural communities is confidently expected to prove a boon to wire mills by this fall. A few jobbers came into the market last week and their specifications were slightly heavier. The tone of the market is encouraging as prices are firm with nails $1.95 a keg and plain wire 2.20c. A large mid-western mail order house's prices for fence and barbed wire are higher this year than last, according to its recent catalog.

Cleveland—Wire tonnage is holding the June average, and no deviation is noted from 2.20c to manufacturers. It is too early to expect expansion in demand from the agricultural areas due to improved farm buying power, this being the slow season for buying fence material, but producers look forward to much larger business in September and October.

Warehouses Find Orders Taper as Season Advances

Warehouse Prices, Page 58

New York—Warehouse volume continues light, jobbers moving small lots only, but buying covers a fairly wide range. Recent price adjustments on cold finished steels, hoops and bands, have failed to affect volume materially.

Philadelphia—Jobbing demand has tapered further, with prices unchanged.

Pittsburgh—Occasionally a carload of mixed steel products is moved from warehouses here. Heavy finished products appear dullest. All prices are unchanged but band and hoop quantity extras have been revised.

Detroit—Mill competition in the warehouse field has been intensified recently, being noted in sales as small as 200 pounds in the case of sheets, the volume of business is about the same as the past three or four months. Prices are steady.

Cincinnati—Summer dullness has struck warehouses here with full force, volume being further restricted. Building materials are particularly slow. Demand from highway improvements is below seasonal normal.

Chicago—Plant shutdowns are restricting sales, which are in about the smallest volume of the year to date. Warehouses look for seasonal improvement during August. Prices are unchanged and fairly steady.

St. Louis—Business of iron and steel warehouses in July is running slightly below the June volume. There has been some betterment in buying of cooperage supplies, but other lines have not shown an increase.

Used Sheet Piling Cuts Into Market for New

Philadelphia—Application of used sheet piling is taking a good percent of pending piling tonnage out of the market. It is understood about 600 tons of used piling at Wilmington, Del., will be applied to work on the state bridge over Shrewsbury river in New Jersey, which will leave about 100 tons of new piling to be purchased.

It is also reported several hundred tons for the Ocean City, N. J., development will be piling owned by the Eastern Steel Contracting Co., Atlantic City, N. J., which was the contractor on a previous section. Merritt-Chapman & Scott Corp., New York, is the general contractor on the present section.

Cramp & Co., Philadelphia, general contractors, are understood to be reviving a pier project for the National Railway & Terminal Co., Camden, N. J., which may require about 400 tons of steel piling in addition to 75 to 100 tons of rods. This project first came up about a year ago.

Structural Shapes

Tonnage Shrinks After Recent Awards of Large Public Building Projects — New York Revives Relief Plans— 8000 Tons Active There— Fewer Small Fabricators

STRUCTURAL SHAPE PRICES, PAGE 43

New York—Structural inquiry is light and awards are small. While the industrial relief program is expected to result in completion of plans for several large projects in the East, it will be months before the majority of these become active. New York city has revived projects long dormant requiring close to 8000 tons. State bridges in New York and New Jersey will take about 3500 tons. Prices are unchanged with plain material generally firm at 1.70c, eastern mill.

Boston — The recent moderate spurt in small structural awards has subsided. Pending requirements are limited largely to bridge and public construction, close to 1000 tons being active in New England territory. Two large projects approved, taking large tonnages, which may become active under relief plans include the Huntington avenue subway and Saugus river bridge, Lynn and Revere.

Philadelphia—Fabricators are expecting daily the issuance of specifications for the Thirtieth street postoffice, originally scheduled out July 14. Requiring 14,000 to 17,000 tons, this project is by far the largest pending in this district. Pennsylvania railroad is understood to be rushing plans for certain work at the Newark, N. J., terminal for which several thousand tons are to be released on prior contracts. Little has been released for its electrification program since the suspension April 1. Shapes are moving usually at 1.70c, nearest mill.

Pittsburgh—More than 400 tons for a Wyoming county, Pennsylvania bridge will be closed Aug. 5, with smaller jobs sponsored by the state. Owing to a 10 per cent reduction in appropriations for government work on which bids have not been taken, the Philadelphia and Newark, N. J., postoffice and some other large projected government work may be withheld for a while. Operations by fabricating interests are at a low ebb. Plain shapes are firm at 1.60c base.

Chicago—Bridge work predominates in miscellaneous structural awards, requiring around 1500 tons. A number of small bridges also are included in new inquiry. Bridges in Illinois and Wisconsin will take about 600 tons, and a viaduct at Milwaukee 500 tons. Plain material continues 1.70c, Chicago.

Cleveland—The award of approximately 500 tons of sheet piling for the Cleveland easterly sewage disposal plant to Inland Steel Co., Chicago, features the market here. Two other jobs, the Tompkins county, New York, courthouse, and West Moreland-Indiana counties, Pennsylvania, bridge, are about to be awarded by Cleveland general contractors. The market is fairly active for small, miscellaneous lots. The number of such jobs now being figured by old-established fabricators has been increased considerably by reason of the fact numerous small fabricators have been forced to suspend.

Contracts Placed

750 tons, three state bridges, New York, to Lackawanna Steel Construction Corp., Buffalo.

725 tons, bridge, Marseilles, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

500 tons, sheet piling, easterly sewage disposal plant, Cleveland, to Inland Steel Co., Chicago.

458 tons, viaduct across South river, Old Bridge, N. Y., Pennsylvania railroad tracks and Main street, to McClintic-Marshall Corp., Bethlehem Pa.; Hill Construction Co., New York, contractor.

450 tons, state bridge, route S-28, South river, New Jersey, to McClintic-Marshall Corp., Bethlehem, Pa.

325 tons, Lone Rock bridge, Wisconsin, to Clinton Bridge Works, Clinton, Iowa.

300 tons, highway bridges, Jefferson county, Oklahoma, to Petroleum Iron Works, Sharon, Pa.

200 tons, testing laboratory, Iowa City, Iowa, to Des Moines Steel Co., Des Moines, Iowa.

180 tons, factory building, Ramapo-Ajax Corp., East St. Louis, Ill., to Missouri Bridge & Iron Co., St. Louis.

170 tons, postoffice, Monterey, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

165 tons, state bridge, Indian and Owens creeks, Maryland, to American Bridge Co., Pittsburgh.

150 tons, bridges, Missouri and Illinois, to St. Louis Structural Steel Co., East St. Louis, Ill.

145 tons, foundry building, Drumright, Okla., to Capital Iron Works, Topeka, Kans.

115 tons, highway bridge, Milan, Mo., to Illinois Steel Bridge Co., Jacksonville, Ill.

115 tons, highway bridge, Harper county, Oklahoma, to Petroleum Iron Works, Sharon, Pa.

115 tons, highway bridge, Cotton county, Oklahoma, to Petroleum Iron Works, Sharon, Pa.

110 tons, various Oregon state bridges, to unnamed interests.

100 tons, state bridge, Pilchuck creek, Washington, to Wallace Bridge & Structural Steel Co., Seattle.

100 tons, plant addition, South San Francisco, Calif., Pacific Bone, Coal & Fertilizer Co., to Western Iron Works, San Francisco.

100 tons, bridge, Northumberland county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.

100 tons, transit shed, Milwaukee harbor, to William F. Eichfeld & Son Co., Milwaukee.

Unstated tonnage, transmitter towers, station WEBC, Superior, Wis., to American Bridge Co., Minneapolis office.

Awards Compared

	Tons
Awards, week ended July 23	5,373
Awards, week ended July 16	14,451
Awards, week ended July 9	8,174
Awards, this week in 1931	24,647
Av. weekly awards, 1931	34,236
Av. weekly awards, 1932	15,330
Av. weekly awards, June	20,034
Awards, to date, 1931	1,111,401
Awards to date, 1932	459,903

Contracts Pending

5000 tons, bridge, St. Lawrence river, Lachine and Caughnawaga, Quebec; plans prepared for provincial department of public works; bids soon.

2993 tons, state bridge, South Canadian river, Bridgeport, Okla.; bids Aug. 2.

1800 tons, Shark river bridge, New Jersey; S. S. Thompson, Red Bank, N. J., low on general contract; approximately 400 tons of sheet piling also required.

1650 tons, steel sheet piling, cutoff wall, Helena, Ark., United States engineer, Memphis, Tenn.; C. G. Kershaw Contracting Co., Birmingham, Ala., general contractor.

1350 tons, Bell telephone exchange, Philadelphia; Geo. A. Fuller Co., general contractor; previously noted as smaller tonnage.

800 tons, federal reserve bank, Philadelphia; general contract to Irvin & Leighton, Philadelphia.

700 tons, state bridges, New York; bids in.

600 tons, bridges, Illinois and Wisconsin.

570 tons, postoffice, Reno, Nev.; bids July 28.

525 tons, state bridge, Merced river, Calif.; bids Aug. 3.

504 tons, three state bridges, Missouri; bids to be opened July 29.

500 tons, viaduct, Milwaukee, for Chicago, Milwaukee, St. Paul & Pacific railroad.

500 tons, bridge, Blanche river, Engle-

hart, Ont.; department of northern development, Toronto, Ont.

438 tons, state bridge, Wyoming county, Pennsylvania; bids Aug. 5, Harrisburg, Pa. Included, 54 tons reinforcing bars.

400 tons, bridge, Erie railroad, Erwins, N. Y.

350 tons, postoffice, Glendale, Calif.; Sarner & Zoss Inc., Los Angeles, low $265,400, bids July 14.

320 tons, bridge, Chester and Montgomery counties, Pennsylvania; bids July 22.

250 tons, postoffice, Billings, Mont.; bids opened.

250 tons, bridge superstructure, South Umpqua river, veterans' administration home, Roseburg, Oreg., Portland Bridge Co., Portland, Oreg., low, bids July 18.

200 tons, Sacred Heart convent, Albany, N. Y.

180 tons, York county bridge, Pennsylvania; G. A. & F. M. Wagman, Dallastown, Pa., low on general contract.

150 tons, postoffice, Glendale, Calif.; bids opened.

144 tons, bridges in Johnson county, Cheyenne, Wyo.; bids July 20.

125 tons, state bridge, Oxford, Me.

110 tons, wharf sheds, New Orleans, La.; bids July 22 by port commissioners.

100 tons, approximately, manufacturing building for Taylor & Co., Betzwood, Pa.; bids asked.

Industrial Accident Frequency Rate Reduced

During the past two years 4000 industrial members of the National Safety Council, Chicago, have reduced their accident frequency rate 39 per cent, the council announces. As industrial frequency rates are established in accordance with the number of man-hours worked, the record was not brought about by the sharp reduction in total working time. There were 17,000 industrial fatalities in the country during 1931, approximately 3000 of which occurred in manufacturing plants.

The steel industry ranked eighth among 28 industries in accident frequency, with 10.87 lost time injuries per 1,000,000 man-hours worked, and twentieth in severity, with 2.22 days lost as a result of such injuries, per 1000 man-hours exposure.

Rail Traffic To Fall 12%

Pittsburgh—Estimated third quarter car loadings in the Allegheny regional district will be 12.4 per cent under the actual third quarter loadings of 1931, according to the Regional Shippers Advisory board. Car loadings of iron and steel are anticipated at 91,922 cars against an actual 103,516 cars last year. Coal and coke loadings will be about 357,390 cars against an actual 404,287 cars a year ago.

Concrete Bars

Volume Holds Up—Bridge and Highway Work Predominates—Milwaukee Viaduct, St. Louis Waterworks and Minneapolis Postoffice Take Substantial Tonnages

REINFORCING BAR PRICES, PAGE 43

New York—Several hundred tons of reinforcing bars and mesh for New Jersey highways and bridges have been placed. Fresh inquiry is light and contractor-buyers are slow to close.

Boston—Bridge and highway construction offers the best outlet for reinforcing steel, several hundred tons of bars and mesh being required for jobs in Massachusetts and Maine. Private building demands are limited to small lots. Output of rerolled and mesh material in New England has been curtailed.

Pittsburgh—Shipments are made up of small lots, almost entirely for state highways. A Pennsylvania state letting occurs on the average of twice a month and the next is scheduled for Aug. 5 which will include several reinforced bridges and concrete roadways. Miscellaneous tonnages were slightly more active last week and one mill reports closing on about 2500 tons during the week composed largely of such jobs. Mill stock lengths of reinforcing bars are 1.60c, with cut lengths 1.75c.

Cleveland—State highway awards of July 3, 15 and those scheduled for July 29 call for approximately 1000 tons of concrete bars, in various small lots. Plans will be available this month for the river piers of the Cleveland Main street bridge, requiring 200 tons of concrete bars. A tonnage also will be needed for the westerly approach on which plans will be issued later. Several fair size jobs are pending, including 350 tons for the West Moreland-Indiana counties, Pennsylvania, bridge, to be awarded by a Cleveland contractor. Mill lengths of concrete bars are selling to fabricators at 1.50c, base, Cleveland.

Chicago—About 1200 tons of concrete bars are included among recent awards for bridge and highway work. A viaduct at Milwaukee taking 950 tons has been placed, and 816 tons have been awarded for the Minneapolis postoffice. Bars for road work in Indiana, Illinois and Kentucky remain to be placed. Prices generally show a steady tone at 1.60c for stock lengths of billet bars, 1.75c for cut lengths and 1.45c for rail steel.

Birmingham, Ala.—A number of small orders for reinforcing concrete bars have been reported, but production is not improved. Concrete Steel Co. here just received a few orders for bars when its plant burned to the ground.

Awards Compared

	Tons
Awards, week ended July 23	5,989
Awards, week ended July 16	2,549
Awards, week ended July 9	3,593
Awards, this week, 1931	6,957
Av. weekly awards, 1931	6,808
Av. weekly awards, 1932	4,247
Av. weekly awards, June	4,691
Awards, to date, 1931	209,462
Awards, to date, 1932	127,428

Contracts Placed

1120 tons sedimentation basin, St. Louis waterworks, to Missouri Rolling Mill Corp., St. Louis.

950 tons, viaduct, at Milwaukee; Chicago, Milwaukee, St. Paul & Pacific railroad, to Calumet Steel Co., Chicago, through William Christensen Construction Co., Racine, Wis., general contractor.

816 tons, postoffice, Minneapolis, to Concrete Steel Co., Chicago.

595 tons, two bridges, Ventura county, California, to Concrete Engineering Co., Los Angeles.

500 tons, Ohio state highway awards of July 3 and 15; to various fabricators.

428 tons, jail, Milan, Mich., to Jones & Laughlin Steel Corp., Pittsburgh, through J. A. Utley Co., contractor.

225 tons, state bridge, Boise, Idaho, to unnamed interests; C. F. Dinsmore, Boise, general contractor.

200 tons, tipples, Pennsylvania railroad, to Jones & Laughlin Steel Corp., Pittsburgh, through D. B. Long, Baltimore.

200 tons, various Oregon road and bridge projects, to unnamed interests.

185 tons, Pennsylvania state roadwork, awarded through D. L. Risser, Lebanon, Pa., to Kalman Steel Corp., Bethlehem, Pa.

150 tons, county highway bridge, 135th street, Chicago, to unstated interest.

120 tons, Grand-Olive building, St. Louis, to Laclede Steel Co., St. Louis.

100 tons, superstructure, garage, Philadelphia Savings Fund society, Philadelphia, to Taylor-Davis Inc., Philadelphia.

100 tons, road work, Kentucky, to Calumet Steel Co., Chicago.

100 tons, bridge substructure, Channahon, Ill., to Concrete Steel Co., Chicago.

100 tons, residence and swimming pool, Madison avenue, Riverside, Calif., to unnamed interest.
100 tons, Green river bridge, King county, Washington, to Pacific Coast Steel Corp., Seattle.

Contracts Pending

500 tons, bridges and highways, Massachusetts; Coleman Bros. Inc. low on general contract.
302 tons, bridge, South Canadian river, Bridgeport, Okla., state highway commission; bids Aug. 2.
275 tons, San Gabriel dam No. 2, Los Angeles county, California; bids opened.
270 tons, Bell telephone exchange, Philadelphia: George A. Fuller Co., general contractor.
243 tons, bridge, Lawrence county, Pennsylvania, for state highway department; bids Aug. 5, Harrisburg, Pa.
220 tons, highway, Los Angeles county, California; bids Aug. 3.
200 tons, Shark river bridge, New Jersey; S. S. Thompson, Red Bank, N. J., low on general contract.
200 tons, river piers, Main street bridge, Cleveland; bids this month.
160 tons, road improvement, Hamilton county, Ohio, general contract to Brewer & Brewer, Cincinnati.
150 tons, improvement to Cleves-Hamilton road, Hamilton county, Ohio, for state highway department, general contract to Stillwater & Co., Cincinnati.
125 tons, highway, Pittsfield, Mass.
113 tons, highway, Alameda county, California, bids July 27.
105 tons, state bridge, Merced river, California; bids Aug. 3.
100 tons, cutoff wall, Helena, Ark., United States engineer, Memphis, Tenn.; C. G. Kershaw Contracting Co., Birmingham, Ala., general contractor.

General Electric Co. Gets Its Share of Business

Sales billed by the General Electric Co., Schenectady, N. Y., in the first half of 1932 totaled $80,110,498, or 43 per cent under the $141,180,091 of a year ago. Profit available for common stock dividends in the first half was $7,653,187, or 27 cents a share, against $21,523,722 or 75 cents a year ago. Decline in the company's business is about the same as for the electrical industry as a whole. No worth-while new developments have been curtailed, and engineering and research work is being continued.

Takes Navy Yard Equipment

Philadelphia—American Engineering Co. has booked power plant equipment for various navy yards to the extent of $104,593, f.o.b. works.

Tabor Books Navy Cupola

Philadelphia—Tabor Mfg. Co. will supply one foundry cupola for the Mare Island, Calif., navy yard at $1175, delivered.

Pipe

3500 Tons of Steel Pipe Placed For New York Courthouse—1200 of Cast for Ann Arbor

PIPE PRICES, PAGE 58

New York—Approximately 3500 tons of steel pipe for foundation work for the new federal courthouse here have been placed by the George J. Atwell Foundation Corp., 136 East Fifty-seventh street, general contractor.

Cast pipe inquiry is light and buying is limited to small lots. Shrub Oak, N. Y., has bids on several hundred tons up to 12-inch. A few state jobs take about 300 tons. Steel and wrought pipe for heating contracts for six schools, requiring about 200 tons, has been placed. Cast prices are steadier.

Allegheny Steel Co., Pittsburgh, has booked 5055 cold drawn seamless steel boiler tubes for navy yards at Boston, Brooklyn, N. Y., and Norfolk, Va., at $3308.40, delivered.

Michigan Seamless Tube Co., Detroit, booked 5746 tubes for the Puget Sound, Wash., yard at $4502.14, delivered. Bids closed June 28.

Wheatland Tube Co., Philadelphia, booked about 325,370 feet of small-size black and galvanized pipe for east and west coast navy yards, price being $18,316 delivered at eastern yards and $11,933 to western.

Boston—Cast pipe buying is confined to small lots. Mohawk Tube Co., Cohoes, N. Y., will supply about 40 tons for the state office building, Boston. Lack of building limits buying of steel and wrought pipe. Cast prices continue to hold recent gains.

Philadelphia—Approximately 200 tons of alloy iron pipe ranging from ¾-inch to 8 inches diameter, has been bought by the New York Shipbuilding Co. for installation in the WASHINGTON, transatlantic liner now under construction. The award went to Republic Steel Corp.

Pittsburgh—Oil country goods suffered a slight contraction in demand last week and as orders for standard pipe continue low the entire market for tubular goods was a shade weaker. However, there appears to be an active inquiry in the Standard Oil Co. of New Jersey's 40 miles of 20-inch pipe, but at present it is undecided whether the New Jersey company or the Lycoming Natural Gas Co. will do the buying of this line pipe. Seamless and butt-weld demand continues to be better than that for lap-weld.

Youngstown, O.—A slight spurt in demand for merchant pipe, largely for replenishment of low distributing stocks, has added one open-hearth each to the Campbell works of the Youngstown Sheet & Tube Co., and the Lansingville plant of the Republic Steel Corp. A small percentage of seamless capacity is active.

Cleveland—Jobbers are keeping up their stocks of pipe, but mills are making few direct shipments to users in this district. Demand for oil country pipe is light. Considerable second-hand pipe was being sold up until recently, but some buyers say that it is difficult now to obtain such material.

Chicago—Cast pipe sellers see prospects for some improvement in activity as a result of recent government passage of the bill designed to aid construction of self-liquidating projects. This is expected to benefit waterworks of some communities which recently have been unable to finance proposed construction. Cast pipe awards and inquiry recently have been extremely light, one exception being the placing of 1200 tons for Ann Arbor, Mich. Prices recently have been rather weak but are quotably unchanged.

Birmingham, Ala.—Pipe production is at 25 per cent. Few awards are noted. A recent survey by the pipe industry verifies that made by the American Water Works Association which shows need for a large pipe tonnage if proper financing can be done by municipalities and others.

Cast Pipe Placed

1200 tons, 6 to 12-inch, Ann Arbor, Mich., to American Cast Iron Pipe Co., and Central Foundry Co., Birmingham, Ala.
200 tons, approximately, 3⅜ to 8-inches alloy iron pipe for installation in S. S. WASHINGTON, awarded by New York Shipbuilding Co., Camden, N. J., to Republic Steel Corp., Youngstown, O.

Steel Pipe Placed

3500 tons, approximately, foundation, federal courthouse, New York, awarded by George J. Atwell Foundation Corp., New York, general contractor; to Republic Steel Corp., Youngstown, O.

Cast Pipe Pending

500 tons, 6 to 12-inch, Shrub Oak, N. Y.; bids in.
333 tons, 4 to 10-inch class 150, Whittier, Calif.; bids opened.
250 tons, 8-inch, Bedford, Pa.; bids in.

Strip

July Bookings Fall Below June —Prices Generally Firm, with Occasional Slight Shading

STRIP PRICES, PAGE 43

Pittsburgh—Decline in demand for carbon steel strip continues. Mill operations last week on hot-rolled strip touched a low point as two leading independents were entirely closed. However, the rate may reach 15 per cent this week when rollings may be scheduled for a few days. The base of 1.45c for hot-rolled and 2.00c for cold-rolled is generally held.

New York—Strip sellers see little improvement over the next month or so, with current business at possibly the lowest point this year. The market is nominally 1.45c, Pittsburgh, for hot strip in carlots, and 2.00c, Pittsburgh, for cold strip.

Philadelphia—Hot strip is moving slowly at 1.45c, Pittsburgh, in carlots, and cold strip at 2.00c, Pittsburgh. Sellers see little improvement over the next few weeks.

Youngstown, O.—Narrower widths of strip continue most in demand, although it is expected the Ford Motor Co. will release some wider strip tonnage soon. Other consumers are taking only needs and lots are one-third to one-fifth the volume of former purchases. Immediate delivery is required.

Cleveland—Strip steel bookings are 50 per cent of the June average and at the lowest point within the memory of some sellers. With others, bookings have not fallen so far below the June rate. Hot-rolled strip generally is 1.45c, base, Pittsburgh, to carload buyers, and 1.50c for less than carload users, though large consumers who lately have been taking less than carloads have been able to specify at 1.45c. Cold-rolled remains 2.00c, base Cleveland, and is held firmly at this figure by large producers. One or two small mills, however, are occasionally offering concessions of $2 per ton.

Chicago—Strip specifications are in unchanged volume, with operations holding around 15 per cent. Requirements of automotive parts makers are spotty and demand from miscellaneous consumers also is in small lots for present needs. Prices are reported well maintained at 1.55c to 1.60c for hot strip with cold-rolled strip continuing 2.00c, Pittsburgh-Cleveland.

St. Louis Smelting & Refining Co. recently completed a 5-mile tunnel at Rico, Colo., for bringing out pyritic iron, but is deferring operations until the market situation improves.

Steel Rate Gains Point as More Mills Resume

Pittsburgh—Gain in the ingot rate here last week to 14 per cent up two points for the second consecutive week, is in line with an improved sentiment in the steel industry. According to present plans, a large steel corporation division will resume July 25 having been down since last June, so that the ingot rate may cross 15 per cent this week. Independent mills are running better than they did a week ago. Eight of 54 blast furnaces owned by integrated steel concerns are blowing.

Operations, week ended July 23	**16.5**
Operations, week ended July 16	**15.5**
Operations, week ended July 9	**12**
Operations, one year ago	**30**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Philadelphia—Eastern steelmaking operations are higher at 13-14 per cent, compared with 11-13. The Pencoyd, Pa., producer, which temporarily had suspended open-hearth production, has put three furnaces into operation.

Buffalo—District steelworks will increase their output eight points beginning July 25. Tentative schedules call for 19 per cent operations this week, staggered schedules accounting for most of the rise. Seven open-hearth units are scheduled this week.

Youngstown, O.—Ingot production here in the week ended July 23 was up one point to 17 per cent and is continuing at that level. Twenty-two of 83 open-hearth furnaces are melting. The leading independent is operating at 10 per cent of ingot capacity.

Cleveland—Steel ingot production here for the week ended July 23 continued at 18 per cent, and is scheduled at the same level for the current week. The active open hearths are: Four, Corrigan, McKinney Steel Co.; and two, Otis Steel Co. American Steel & Wire Co., which dropped its five active units just previous to July 4, may resume with some hearths Aug. 1, though this is not definite.

Chicago—Ingot production was maintained during the past week at 15 per cent and is expected to continue near that figure during the coming week. Pig iron production of steel works interests is unchanged with eight of 36 blast furnaces active. Rail mill operations have declined; schedules of most other finishing plants are steady.

Birmingham, Ala.—Steelmaking operations in the week ended July 23 continued at 21 per cent, with little change indicated for the week ended July 30. The wire and nail mills of the Gulf States Steel Co. at Gadsden continued in operation last week. Sloss-Sheffield Steel & Iron Co. has banked a blast furnace, leaving three active here.

Bolt, Nut Buying Dull; Farm Needs Give Hope

Bolts, Nuts, Rivets, Prices, Page 43

Pittsburgh—Bolt and nut bookings are smaller this month than last. No consumer is showing any activity. Nuts and bolts still are quoted 75 off list in the open market. Large rivets hold 2.25c, base.

New York—Rivets are soft here at 2.10c to 2.25c, Pittsburgh. Bolts and nuts are firm at 75 off. The past week was the best this month and includes a carlot of bolts and nuts of one size and length for an eastern railroad. Approximately 35 tons of black rods will be rolled by a Pittsburgh mill for the Bourne, Mass., pier.

Chicago—An occasional slight increase in specifications for bolts and nuts from farm implement manufacturers is the only bright spot in a dull market. Incoming business from other users remains at the lowest level of the year, but with some plants now idle scheduled to resume operations soon, better activity is anticipated for August and September. Bolt, nut and rivet producers are operating only as orders warrant. Prices are steady at 75 off for bolts and nuts and 2.35c, Chicago, for structural rivets. City of Chicago is taking bids on 20,000 track bolts and nuts for the Chicago avenue lake and land tunnel.

Sandvik Steel Works American Agency Inc., New York, has changed its name to Sandvik Steel Inc.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Philadelphia, delivered	14.26
Virginia furnace	17.50
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	18.90 to 19.40
Buff., all-rail, Newark	17.28 to 17.78
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.40 to 19.90
Buffalo, all-rail, Newark	17.78 to 18.28
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	18.00
Eastern, del. Phila.	14.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	15.26

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.50
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.50 to 15.00
Pittsburgh, delivered	15.13 to 16.13
Eastern Penn., del.	14.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50· 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.00 to 2.25
Connellsville foundry	3.00 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.25 to 10.50
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50% (nom.)	22 cents
Brazilian, 46-48% (nom.)	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bassemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	28.00
Forging, Chicago	33.00 to 34.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	37.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$68.00
*Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	68.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $4.25 unitage	91.00
Ferromolybdenum, stand. 50-60 per cent, per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$18.31
Washed gravel, import duty paid tide, gross ton	19.50

Pig Iron

Makers Confident of Early Fall Upturn—July Sales and Shipments at Year's Low Point

PIG IRON PRICES, PAGE 50

Pittsburgh—For the second consecutive week an undercurrent of improvement is noted in demand for pig iron. A large local foundry will start up sometime after Aug. 1, and a New Castle, Pa., foundry has the same intention. Although iron still is moving in a carload or two at a time, early fall prospects lend hope that shipments will be increased. This situation applies only to foundry iron, as malleable, bessemer and basic grades have no market, and quotations are nominal. In the main prices are based locally on $15 for all grades.

Boston—Sales and inquiries are quiet. Prices are easy. Some small lots of eastern Pennsylvania iron are reported to have been sold at $15.50, delivered. Dutch iron at Providence, R. I., is $14.50, f.o.b., and $15, delivered to points in that district. Buffalo iron is reported to have moved at slightly more than $18, delivered. Local furnace prices generally are closer to $16, though the range is up to $17. Indian iron is $16, dock.

New York—Another light week prevailed in pig iron. Few orders are for more than a carlot. Eastern Pennsylvania iron now is $13.50, furnace, with Buffalo iron untested at $14 to $14.50, furnace. An occasional carlot of southern iron is being purchased for mixture at $10, furnace.

Philadelphia — Eastern Pennsylvania foundry iron is being quoted at a flat level of $13.50, base, furnace. There is little to test the market, however. Bids were opened recently on 145 tons of foundry iron for various naval yards.

Buffalo—Pig iron sales and shipments continue at the low rates of the second quarter. District prices are firmly established at $16, base.

Youngstown, O.—Sales of foundry and malleable grades continue on a parity with shipments from blast furnaces in this district, both being restricted to immediate needs. Orders in the past week were the smallest in the aggregate in many years.

Cleveland—A little more confidence that August will bring some improvement in pig iron shipments is apparent among producers here, due mainly to the fact July is registering the lowest level for any month on record. Foundries have no stocks; the normally largest consumers take no more than they can use from week to week; yet the feeling among them is that business basically is on the upgrade. Cleveland furnaces have been able to do very little in outside competitive territory, regardless of price; and practically nothing in Cleveland, though the four steelworks stacks continue operating, as for some months past. One lake merchant producer booked 1000 tons in the week. Prices are nominal at $15.50, base, Cleveland furnace, for local delivery, and $14 to $14.50 for outside shipment.

Cincinnati — New orders for pig iron and shipments are probably at the low mark for the year. The melt at jobbing foundries is generally limited to one heat a week. Automotive partsmakers in some places were reported exerting pressure on pig iron quotations. Scattered inquiries for carload lots and one for 200 tons in central Ohio are current in the market here.

Chicago—Pig iron shipments remain at a low ebb despite the appearance of a number of small inquiries. Improvement over present activity is expected to be gradual. Automotive requirements for pig iron, ordinarily the first to reflect declining activity in that industry are light and interest in iron purchases by farm implement manufacturers is lacking. The market continues $15.50, furnace, for No. 2 foundry and malleable.

St. Louis—A fair number of sales for spot shipment and for delivery during the remainder of the third quarter are noted here, the total approximately 2600 tons for the week. This is comprised entirely of foundry grades, to be supplied mainly by northern furnaces. Some improvement also is evident in specifications on contracts. The leading local producer reports shipping directions thus far in July are well ahead of those in the comparable period of June.

Birmingham, Ala.—The pig iron market is believed headed toward improvement, though production here has been reduced further. The price is firm at $10, base, for shipment into competitive districts, and $11 for local delivery.

Toronto, Ont.—Pig iron sales in the week were close to 500 tons, in single car orders. The daily melt is holding around 30 per cent. Inquiries are negligible, but consumers enter the market at regular intervals for supplies.

Coke

Movement of Foundry Fuel Further Restricted—Furnace Sales Light—Prices Are Steady

COKE PRICES, PAGE 50

Pittsburgh—There has been no change in the extremely poor demand for foundry coke. The price continues $3 to $4.25, according to grade. Furnace coke is moving slowly, with concessions below $2. By-product coke stocks are large.

New York—Metallurgical coke specifications continue to reflect sluggish operations at local foundries. Little real improvement is anticipated before September. Beehive furnace coke is holding at $1.50 to $2, Connellsville, for heating quality and, $2 to $2.15 for smelting grades. Beehive furnace coke is $2.75 to $4.25, depending upon analysis. By-product foundry coke is $8.21 to $8.81, delivered Newark, N. J.; $10, New England; and $8.50, Philadelphia.

Chicago—Foundry operations are unimproved and coke consumers are taking only sufficient fuel to accommodate present requirements. The July movement is expected to be the lightest for the year to date. By-product foundry coke continues $7, ovens, for outside delivery; and $7.75, delivered in the Chicago switching area.

Cincinnati—Shipments of by-product foundry coke are behind the corresponding date last month. Domestic grades are at a standstill.

St. Louis—The mid-summer decline in foundry operations has further curtailed demand for coke, and shipments so far this month have been the smallest for any similar period in recent years. Production has been reduced, but stocks are larger than 30 days ago.

Birmingham, Ala.—Foundries are buying a minimum of coke and production is being held to around 30 per cent. A few more than 525 ovens of a total of 1390 are in operation in this district.

Scrap

Steel Corp. Purchase from New York Central May Mark Turn in Market—Sentiment Is Better

Pittsburgh—It now develops that the recent transaction between the United States Steel Corp. and the New York Central railroad will involve closer to 50,000 tons of scrap than the first reported 25,000 tons minimum. Shipments are to proceed at four cars daily into Farrell, Pa., and seven cars daily into Youngstown, O. This is at the rate of about 10,000 tons a month and it is understood the entire matter covers five months delivery. Events are leading to a stronger situation. Schedules are being made up for the Donora, Pa., and Munhall, Pa., works of the Carnegie Steel Co. for August, although there will probably be no buying for this concern's other divisions. Independent mill operations here were augmented by three open

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	6.00 to 7.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	6.50 to 7.00
Buffalo, No. 2	5.00 to 5.50
Chicago	4.50 to 5.00
Cleve., No. 1	6.50 to 7.00
Cleve., No. 2	6.25 to 6.75
Det., No. 1 deal.	3.50 to 4.00
Det., No. 2 deal.	2.00 to 2.50
E. Pa. del. mill	6.00 to 6.50
E. Pa., No. 2 del.	4.00 to 4.50
N. Y. deal. R. R.	2.85 to 4.00
N. Y. deal, No. 2	1.00 to 2.00
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	8.00 to 8.50
St. L. No. 1 sel.	5.50 to 6.00
Federal, Ill.	5.00 to 5.50
Granite City, Ill.	4.50 to 5.00
Valleys, No. 1	8.00 to 8.50

COMPRESSED SHEETS

Buffalo, dealers	5.00 to 5.50
Chi. (Factory)	3.50 to 4.00
Cleveland	6.50 to 7.00
Detroit, dealers	3.50 to 4.00
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	7.50 to 8.00
Valleys	7.25 to 8.25

BUNDLED SHEETS

Buffalo	4.00 to 4.25
Cinci., del.	3.75 to 4.25
Cleveland	6.00 to 6.50
Eastern, Pa.	5.00
Pittsburgh	6.50 to 7.00
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.50 to 3.00
Cincinnati	2.00 to 2.50
Detroit, dealers	1.25 to 1.75
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	8.00 to 9.00
Boston, dealers	4.00 to 4.50
Buffalo	8.75 to 9.25
Chicago (3 ft.)	7.00 to 7.50
Chicago (2 ft.)	7.50 to 8.00
Cinci., deal.	8.00 to 8.50
Detroit, deal	7.00 to 7.50
Pitts. (open-hearth, 3 ft. and less)	10.00 to 10.50
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.50 to 6.00
Boston, dealers	2.00 to 2.50
Buffalo	6.25 to 6.75
Chicago, net	4.50 to 5.00
Cinci., deal. net	3.25 to 3.75
Det., net deal.	2.50 to 3.00
Eastern Pa.	5.50 to 6.00
N. Y., deal. mill	1.75 to 2.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
Pittsburgh	8.50 to 9.00
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	6.50 to 7.00
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	9.00 to 10.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.50 to 11.00
Pitts., sheet bar crops	10.75 to 11.25

FROGS, SWITCHES

Chicago	4.50 to 5.00
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	4.50 to 5.00
Cleveland	6.25 to 6.50
St. Louis	4.50 to 5.00

RAILROAD WROUGHT

Birmingham	5.00 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.25 to 4.75
Buffalo, No. 2	6.50 to 7.00
Cinci., No. 2	4.50 to 5.00
Chi., No. 1, net	4.00 to 4.50
Chicago, No. 2	4.50 to 5.00
Eastern, Pa.	6.00 to 6.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	8.00 to 8.50
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	4.50 to 5.00

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	5.00 to 5.50
Chicago, No. 1	3.50 to 4.00
Cinn., No. 1 dl.	3.75 to 4.25
Cinn., No. 2	2.25 to 2.75
Cleve., No. 2	4.00 to 4.25
Det., No. 1 new deal.	2.50 to 3.00
St. L., No. 1	3.00 to 3.50
Val. new No. 1	7.75 to 8.25

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.50 to 1.00
Buffalo	3.00 to 3.50
Chicago	2.00 to 2.50
Cin., deal.	2.75 to 3.25
Cleveland	3.00 to 3.50
Detroit	1.25 to 1.75
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	5.00
St. Louis	1.50 to 2.00
Valleys	5.75 to 6.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	.60 to .75
Buffalo	3.00 to 3.50
Cinn., deal.	2.75 to 3.25
Cleveland	3.50 to 4.00
Detroit, deal.	1.75 to 2.25
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	4.50 to 5.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.00 to 5.50
Boston, dealers	1.00 to 1.25
Buffalo	3.25 to 3.50
Chicago	2.00 to 2.50
Cinn., deal.	2.75 to 3.25
Cleveland	3.50 to 4.00
Detroit, deal.	1.75 to 2.25
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.00 to 1.50
Pittsburgh	4.50 to 5.00
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.00 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	4.50 to 5.00
Cincinnati	3.50 to 4.00
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	4.00 to 4.50
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	3.00 to 3.50

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	6.50 to 7.00
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	4.50 to 5.00
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal.	6.00 to 6.50
Buffalo	6.50 to 7.00
Chi., elec. fce.	4.00 to 4.50
Cleveland	6.50 to 6.75
Eastern Pa., del.	5.50 to 6.00
Pittsburgh, O. H.	7.00 to 7.50
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	7.00 to 7.50
Eastern Pa.	14.50
St. Louis	8.25 to 8.75

SHAFTING

Boston, ship. pt.	7.50 to 8.50
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	10.50 to 12.00

CAR WHEELS

Birming., iron	6.00 to 6.75
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.00 to 8.50
Chicago, iron	5.50 to 6.00
Chi., rolled steel	5.50 to 6.00
Cincinnati iron	6.00 to 6.50
E. Pa. steel	7.50 to 8.00
E. Pa. iron	8.00 to 8.50
Pitts., iron	8.50 to 9.00
Pitts., steel	8.50 to 9.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	5.00 to 5.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.00
Buffalo (Mach.)	8.50 to 9.00
Buffalo, cupola	8.00 to 8.25
Boston, textile	7.00 to 7.50
Chicago, mach.	6.15 to 6.70
Chi., railroad, net	5.00 to 5.50
Chicago, agri., net	4.50 to 5.00
Cinn., mach. cup.	6.00 to 6.50
Cleve. cupola	6.50 to 7.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00
N. Y., cup. deal.	5.00 to 6.00
N. Y., del. local foundries	7.50 to 8.00
Pitts., cupola	8.50 to 9.00
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	2.75 to 3.00
Bost., mach. cast	7.00 to 7.50
Buffalo, break.	5.00 to 5.50
Cleve., break	3.50 to 4.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	3.75 to 4.25
Eastern Pa.	7.50 to 8.50
N. Y. No. 1, dl.	4.00 to 4.25
N. Y. break, dl.	3.50 to 4.00
Pittsburgh	7.75 to 8.25

MALLEABLE

Boston Consum.	6.00 to 6.25
Buffalo	7.50 to 8.00
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	5.00 to 5.50
Cinci., R. R., del.	7.00 to 7.50
Cinci., agri. del.	6.50 to 7.00
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 6.00
St. Louis, rail	4.75 to 5.25

RAILS FOR ROLLING
5 feet and over

Birmingham	7.50 to 8.00
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	6.50 to 7.00
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.00 to 7.50

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	4.50 to 5.00

LOW PHOS. PUNCHINGS

Chicago	6.50 to 7.00
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	9.00 to 9.50

hearths last week and a few needed releases in carload lots of scrap. A small sale of No. 1 heavy melting steel to the Wheeling Steel Corp. last week also reaffirmed the spread of $8 to $8.50 on that grade. Sentiment is general on the improbability of further declines in scrap and the possibility that prices will rally within the next month or so.

Cincinnati — Dealers in iron and steel scrap are marking time while dull market conditions are aggravated by summer inactivity. Mills maintain fair production schedules but have laid down adequate scrap for present needs and are out of the market for any considerable tonnages. Quotations are nominally unchanged.

Boston—Scrap continues dull, prices being nominal on most grades or easier on attempts to move material to outside districts. New England demand is light, with delivery in truck lots in some instances No. 1 steel in small lots has sold to Central Massachusetts at $5 and $5.25, delivered. Machinery cast ranges $7 to $8 delivered, New England, and dealers are offering $3, f.o.b., for heavy breakable cast.

New York — All grades of scrap are dull and prices nominal in most instances. One dealer is buying some No. 1 heavy melting steel at $4, barge, but shipments of this grade by rail out of the New York and Northern New Jersey district are light. Consumers of stove plate are buying little.

Philadelphia — With only one large yard operating in this district, a firmer tone appears in melting steel scrap. No. 1 is steady at $6 to $6.50, delivered, and No. 2 at $4 to $4.50. A consumer of the latter grade recently put three open hearths into operation after a temporary suspension. Revisions are still being made in some grades. Stove plate and turnings are off to a spread of $5.50 to $6, delivered, and steel shafting to $10.50 to $11.

Buffalo—There is no new activity in scrap. Dealers hope the Youngstown purchase may stabilize the nominal markets but admit no negotiations are pending. Practically no large contracts are outstanding in the district and melt of all grades continues small.

Cleveland—Purchase of about 1000 tons of 80-pound steel rails from the old Northern Ohio traction line near Bedford, O., by a local dealer has led to readjustment of the old rail market. Short rails now are going at $8.50 to $9, a local industry having made a fair-sized purchase around $8.50. Some of the removed rails in fair condition are being sold at about $11 to $12 for rerolling.

Detroit—The local iron and steel scrap market is more at a standstill than at any time in recent months. Prices are unchanged, as offerings and demand keep step in another step downward.

Chicago—A better tone has developed in iron and steel scrap as a result of a moderate improvement in inquiry for small tonnages. Mill purchases of heavy melting steel continue quiet, but some encouragement is derived from the sale of a substantial tonnage recently to the United States Steel Corp. for eastern plants. Canadian producers are seeking scrap in this district but so far have been unable to make any substantial purchases. Prices are nominally unchanged but are stronger in that dealers would be unwilling to sell large lots at these levels. Old material is not being offered freely and some difficulty would be encountered in attempting to cover short orders at less than the present market. In the absence of buying, heavy melting steel continues nominal at $4.50 to $5.

St. Louis—Affected by general lack of demand and hot weather, the iron and steel scrap industry has reached almost complete inertia. Melters are purchasing practically nothing, the only trades reported being of a carlot here and there of special materials. Sellers are making no special efforts to place tonnage, and a waiting attitude prevails.

Birmingham, Ala. — Spotty business is reported with the aggregate small. Prices are unchanged and melters are making offers for such material as is desired. None is being purchased for future delivery.

Toronto, Ont.—Iron and steel scrap is without change. Consumers are buying as demands dictate and mostly special grades. Steel scrap is at a standstill while special iron grades are moving slowly. No. 1 machinery cast continues the most active material and dealers report a scarcity. Dealers are out of the market and prices are unchanged.

Ore Movement Scheduled For 3,500,000 Tons

Iron Ore Prices, Page 50

Cleveland—It now appears to Lake Superior iron ore producers that shipments this year will not exceed 3,500,000 tons. Some operators estimate 3,000,000 tons for the vessel movement, which would bring the total for lake and rail considerably less than 3,500,000. Such a tonnage goes back to 1886, when it was 3,577,000. In 1921 shipments were 22,300,000 tons. The United States Steel Corp. this year is scheduling shipments from its Lake Superior mines to the extent of 1,500,000 tons. With the independents it has been a case of converting stocks to cash, instead of increasing supplies. The following report from the Lake Superior Iron Ore association, Cleveland, records consumption and stocks on hand. It indicates that an Aug. 1 stocks at Lake Erie docks and interior furnaces will be about 2,000,000 tons less than on Aug. 1, 1921.

	Tons
Consumed in May	918,321
Consumed in June	731,108
Decrease in June	187,213
Consumed in June 1931	2,114,270
On hand at furnaces July 1, 1932	26,784,335
On Lake Erie docks July 1, 1932	5,374,337
Total at furnaces and Lake Erie docks July 1, 1932	32,158,672
Total July 1, 1931	28,713,505

Ford Company To Purchase Spiegeleisen

Ferroalloy Prices, Page 50

The Ford Motor Co. is expected this week to award 700 tons of 26 to 28 per cent spiegeleisen for July-September shipment. Specifications for spiegeleisen so far this month have been slightly better than the corresponding period of June, despite the restriction in steelmaking operations. Domestic spiegeleisen, 19 to 21 per cent is steady at $25, furnace. Ferromanganese is quiet at $68, duty paid.

Refractories Becalmed as Orders Are Held Back

Refractories Prices, Page 50

Pittsburgh—Refractory brick still is in a dull market with leading steel concerns failing to purchase anything except minimum immediate requirements. Refractory producers are shipping largely from stock and continue to reduce inventories. Prices are unchanged with $35 base on first quality fire clay and silica brick. Magnesite and chrome brick are both unchanged at $61.50 and $42.50, respectively.

An analyst has figured that unfilled orders of the United States Steel Corp. in the past five presidential campaign years have averaged 7 per cent higher than in off years.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 5.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.00
Copper, hot rolled	14.87½
Lead sheets, cut, to jobbers	6.25
Zinc sheets (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
Rods	
Yellow brass (high, full turnings)	9.75
Naval brass	10.87½
Anodes	
Copper untrimmed	11.75
Wire	
Yellow brass (high)	12.00

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	2.25 to 2.50
Chicago	1.87½ to 2.00
Cleveland	2.50 to 2.75
St. Louis	2.00
Heavy Yellow Brass	
New York	1.50 to 1.75
Heavy Copper and Wire	
New York	3.25 to 3.50
Chicago, No. 1	3.00 to 3.25
Cleveland	3.00 to 3.25
St. Louis	2.50
Composition Brass Borings	
New York	2.12½ to 2.37½
Yellow Brass Tubing	
Cleveland	1.50 to 1.75
Light Copper	
New York	2.62½ to 2.75
Chicago	2.00 to 2.25
Cleveland	2.25 to 2.50
St. Louis	2.25
Light Brass	
Chicago	1.00 to 1.12½
Cleveland	1.00 to 1.25
St. Louis	1.25
Lead	
St. Louis	1.50
Zinc	
New York	0.75 to 1.00
Cleveland	0.75 to 1.00
St. Louis	1.00
Aluminum	
Clippings, new, soft, Cleve.	8.50 to 9.00
Clippings, hard, Cleveland	6.00 to 6.50
Borings, Cleveland	3.00 to 3.25
Mixed cast, Cleveland	3.25 to 3.75
Mixed cast, St. Louis	2.50 to 3.00

Secondary Metals

Remelt, aluminum No. 12	7.00 to 8.00
Brass ingots, 85-5-5-5	5.75

Metals

Lead Declines to New Low but Copper, Zinc and Tin Continue Near Recent Levels

New York—Lead prices declined last week but other metals showed little or no change with pressure largely absent on the part of sellers.

Copper—Custom smelters continue to offer electrolytic metal for delivery through the end of the year at 5.25c, delivered Connecticut. Metal from second hands could be had at 5.12½c and it also was rumored that metal could be had from one first hand seller at this level. Large mine producers quoted 5.37½c. The market received little test last week and whether good tonnages would have brought out lower prices is uncertain. Lake copper was placed on an equivalent price basis with electrolytic. Copper sold abroad at as low as 4.50c. Brass ingot was dull and unchanged. Product prices held but scrap was slightly easier.

Lead—Prices were cut $1 a ton Monday to the new all-time record low levels of 2.65c, New York, and 2.50c, East St. Louis. Sales were at about the level of recent weeks. Volume purchased so far this month is reported to be somewhat ahead of June. A large tonnage remains to be purchased for August consumption. A further large increase in stocks of refined metal at producer's plant precipitated the cut in prices.

Zinc—The market was dull last week but quotations held unchanged at the quotation of 2.50c, East St. Louis, established July 14. Slow operations of galvanizers and other leading consumers have resulted in a continued tapering in zinc demand. Seasonal influences also are accentuating the dullness in the metal.

Antimony—Dullness persisted in the market and prices remained unchanged due to lack of a test.

Tin—Quotations showed fluctuations of only a few points last week, usually in sympathy with the fluctuations in the London market and the sterling exchange rate. The domestic market has been extremely quiet with prices little more than nominal. Formation of a second tin pool to take supplies from the market gives promise of a stronger position.

Toluol Sales Better; By-Product Prices Steady

New York—Demand for coke oven by-products is seasonally light. Prices continue steady in the distillate group, with one or two distributors noting a slightly better demand for toluol. Naphthalene prices are steadier, with a good part of the forced selling completed. Prices are officially unchanged. Sulphate of ammonia is dull, the domestic market following the weak trend for imported material. Phenol buying is of a routine character at unchanged prices.

Coke By-Products

	Spot
Per Gallon, Producers' Plants, Tank Lots	
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$0.85 to $0.90

Quicksilver Lower

New York—Quicksilver prices are easy, and the market is devoid of activity. Small-lot prices for prompt delivery are $54 to $55, a virgin flask of 76 pounds, with round lots at $53.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper Electro delivered	Copper Lake delivered	Copper Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
July 16	5.25	5.87½	5.00	21.10	21.45	2.70	2.55	2.50	22.90	5.00	35.00
July 18	5.25	5.37½	5.00	20.80	21.15	2.65	2.50	2.50	22.90	5.00	35.00
July 19	5.25	5.37½	5.00	20.75	21.10	2.65	2.50	2.50	22.90	5.00	35.00
July 20	5.25	5.37½	5.00	21.00	21.30	2.65	2.50	2.50	22.90	5.00	35.00
July 21	5.25	5.37½	5.00	20.85	21.15	2.65	2.50	2.50	22.90	5.00	35.00
July 22	5.25	5.37½	5.00	20.80	21.10	2.65	2.50	2.50	22.90	5.00	35.00

Machinery

Large Carryover of Proposed Work Still Awaits Release

New York—Demand for machinery and equipment is dull with inquiry largely limited to government needs. Private industrial requirements, while potentially large for replacement, are not expected to develop until general conditions change.

Worcester, Mass.—New England machine and equipment building shops with few exceptions have settled down to curtailed schedules covering the next few weeks, expecting little change in the dull demand. Inquiry and sales are light, most activity being centered in government inquiry.

Pittsburgh—Last week was perhaps the most inactive week of the year as far as orders for steel mill equipment and other types of machinery were concerned. Even current demands such as those for single steel mill rolls were lacking last week. The present market still is featured by the large carryover of proposed work. One equipment seller estimates that decision to go ahead even with one-fifth of the new equipment inquired for would give the equipment builders the most substantial order backlog in history.

Cleveland—A few scattered orders for machine tools and equipment placed in the past week have been encouraging factors and may presage resumption of buying on a fairly moderate scale as autumn months approach. General improvement in business, although slight, which is noted in various industrial centers is reflected to a certain extent in machinery sales. Chrysler has completed buying on a fair list of tools, presumably for use in connection with new Plymouth models.

Chicago—Except for what hope is developing for a moderate improvement in general business conditions over the latter part of the year, sellers of machinery and plant equipment have little of a definite nature on which to base expectations for improved activity over the next several months. Current conditions are unchanged, neither inquiries nor awards showing any increase. Machine tool sales are extremely light and only scattered inquiries are appearing. These are made up principally of individual tools and represent either equipment that is urgently needed or are made for the purpose of price determination. Sales of small tools continue to decline gradually.

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Europe

British Markets Dull but Some Spots Are Brighter—Continent Sees No Improvement in Demand

London,—(*By Cable*)—Markets are unusually dull, with the midsummer holidays imminent. In Scotland sentiment is more confident as to business in the postholiday period. Tin plate demand is expanding and prices are firmer.

Continental markets are inactive but Belgian prices are hardening as a result of the Charleroi strike in the coal industry. Output of continental works is declining. In France the depressed condition is growing steadily worse.

Pacific Coast

Better Sentiment Appears and Buying Is Broader

Seattle—Improved business sentiment is apparent in the iron and steel trade of the Pacific Northwest. Wholesale jobbers report a noticeable pickup in business this week. The volume is not heavy and tonnages are light but buyers have taken a little of everything in stock and orders have come from a wider range. With the higher price levels holding the outlook is more promising.

Awards this week approximated 1000 tons. Beall Pipe & Tank Co., Portland, which is supplying 325 tons of corrugated culverts for the pumping plant, Whippel projects, Ellensburg, Wash., has sufficient other work in hand to justify three 8-hour shifts. Wallace Bridge & Structural Steel Co., Seattle, booked 100 tons of shapes for the state bridge over Pilchuck creek, Washington. About 110 tons of structurals has been taken by unnamed interests for various projects in Oregon.

C. F. Dinsmore, general contractor has awarded 225 tons of concrete bars to unnamed interests for the state bridge at Boise, Idaho. Pacific Coast Steel Corp., Seattle, has booked 80 tons for the Green river county bridge in King county, Wash., and unnamed interests are furnishing 200 tons of reinforcing materials for several Oregon road and bridge projects. L. Romano, Seattle, has the contract for the state bridge over the Skykomish river, Washington, involving 250 tons of structurals, subcontract pending. Washington this week awarded road and bridge jobs totaling $250,000. Announcement is made that Poole & McGonigle, Portland fabricators, will manufacture and reclaim steel rail joints under license of the Texas Rail Joint Co.

Blaine, Wash., opens bids next week for 12 and 16-inch cast iron pipe. Puyallup, Wash., is in the market for 8000 feet and the largest Seattle tonnage pending is 700 tons of 20-inch cast iron pipe for the Maritime avenue improvement, bids probably in August.

Holds Bridge Bonds Legal

San Francisco—(*By Air Mail*)—An important development looking to a large steel tonnage is the decision rendered by Federal Judge Kerrigan in favor of the bridge district relative to the legality of bonds for the San Francisco Golden Gate bridge. In all probability the case will be carried to the United States Supreme Court for final decision. If the legal battle is continued it will be months before work can be started. It is possible the Reconstruction Finance Corp. might finance this $35,000,000 project while litigation is pending.

Reinforcing bar lettings exceeded 1200 tons, the largest weekly total in over a month. The Concrete Engineering Co. took 595 tons for two bridges in Ventura County, Calif. Bids have been opened on 275 tons for the San Gabriel dam No. 2, Los Angeles. New inquiries include 223 tons for highway work in Los Angeles county, bids on which open Aug. 3. Los Angeles out-of-stock prices are firmer and have advanced to 2.50c, base, on carload lots. San Francisco quotations remain unchanged.

Plate sales and inquiries involve small tonnages only. Prices remain unchanged at 2.00c, c.i.f.

Awards of structural shapes aggregated 1425 tons, the largest weekly total in over a month. The award for 800 tons for the El Dorado Oil Co. plant in Oakland, Calif., was divided between the Moore Drydock Co. and the Judson-Pacific Co. The Minneapolis-Moline Power Implement Co. secured 170 tons for a post office at Monterey, Calif. New inquiries include 570 tons for a post office at Reno, Nev., and 525 tons for a bridge over the Merced river in California. Plain standard shapes are firm at 2.10c, c.i.f., while wide flange material holds at 2.20c.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 21

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
		£ s d		£ s d L s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.41	2 18 6	$8.75 to $9.23	1 16 0 to 1 18 0
Basic bessemer	9.97	2 16 0*	6.80 to 7.29	1 8 0 to 1 10 0
Hematite, Phos. .03-.05	11.13	3 2 6	.....	.....
SEMIFINISHED STEEL				
Billets	$17.36	4 17 6	$9.23	1 18 0
Wire rods, No. 5 gage	26.70	7 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$27.59	7 15 0	$26.73	5 10 0
Merchant bars	.97c	6 2 6	.48c	2 4 0
Structural shapes	1.17c	7 7 6	.44c to .45c	2 0 0 to 2 1 0
Plates, †¼ in. or 5 mm	1.39c	8 15 0	.57c to .58c	2 12 0 to 2 13 0
Sheets, black, 24 gage or 0.5 mm.	1.27c	8 0 0	1.11c to 1.20c	5 1 0 to 5 6 0
Sheets, gal., 24 gage, corr.	1.51c	9 10 0	1.49c	6 15 0
Bands and strips	1.23c	7 15 0	.72c to .74c	3 5 0 to 3 7 6
Plain wire, base	1.51c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.83c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.75c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.67	0 15 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$10.41	2 18 6	$ 8.23	210(2)	$ 8.73	315	$16.40	69
Basic bessemer pig iron	9.97	2 16 0*	7.06	180(1)	7.20	260	17.95	75.50
Furnace coke	2.31	0 13 0	4.86	124	3.74	135	4.56	19.20
Billets	17.80	5 0 0	14.50	370	9.83	355	22.94	96.50
Standard rails	1.33c	8 7 6	1.25c	697	1.57c	1,210	1.37c	127
Merchant bars	1.05c	6 12 6	.95c	530	.52c	400	1.19c	110
Structural shapes	1.17c	7 7 6	.99c	550	.52c	400	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.39c	8 15 0	1.17c	650	.68c	520	1.37c	127
Sheets, black	1.31c	8 5 0§	1.44c	800‡	.86c	665‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.55c	9 15 0	2.83c	1,570	1.78c	1,370	4.00c	370
Plain wire	1.51c	9 10 0	2.03c	1,130	1.95c	1,500	1.92c	178
Bands and strips	1.51c	9 10 0	1.04c	580	.86c	660	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

Construction and Enterprise

Pennsylvania

ERIE—American Flexible Coupling Co. has been incorporated with $50,000 capital to manufacture flexible couplings and machine parts, by J. A. Zurn, 221 West Twenty-first street.

PHILADELPHIA—Philadelphia Electric Co. has given a contract to the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for a 183,000-kilovolt-ampere turbo generator for the Richmond generating plant on the Delaware river, to cost about $1,750,000. This is part of an $8,500,000 expansion project to be undertaken over the next few years.

PITTSBURGH — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., will start work at once clearing the site at Mansfield, O., for a warehouse 40 x 65 feet, four stories, with crane aisles, to cost $150,000.

SCRANTON—Ed-Mo Patrol Clock Co. has been incorporated with 10,000 shares no par value to manufacture time-recording devices, patrol clocks and similar devices, by George T. Williams, 401 Hickory street, Peckville, Pa.

Indiana

INDIANAPOLIS — American Metalcraft Inc. has been incorporated with 12,500 shares no par value to manufacture metal specialties, by H. R. DeWolf and A. J. Gibbons.

Illinois

CHICAGO—Marco Mfg. Co., 2635 South Michigan avenue, has been incorporated with 400 shares no par value to manufacture automobile ignition systems and parts, by Leo Marcus and L. C. Barney.

MORRISON—Rich Illinois Mfg. Co. has been incorporated with $150,000 capital to manufacture electric refrigerators, by M. E. Rich and A. W. Collins.

Southern States

NEW ORLEANS—New Orleans Compress Co. will build a plant of high density type, with warehouse, compress to occupy 140,000 square feet of space. A conveying system to cost $20,000 will be installed. J. F. Coleman Engineering Co. is engineer and contract for construction has been let to O. M. Gwin Construction Co., New Orleans.

Oklahoma

TULSA—Butler-Baker Body Works has been incorporated with $25,000 capital to build automotive bodies, by Roy Frizzell, 5009 South Thirty-third West avenue.

Texas

BONHAM—Southwest Pump Co. suffered damage to its plant by fire.

DALLAS—AI Body & Fender Works has established a shop at 3008 Williams street.

DALLAS—Hammond Sheet Metal Co., Frank L. Sweeney manager, has opened a shop at 2101 Corinth street.

FORT WORTH—State Metallizing & Engineering Corp. has been incorporated with $100 capital to manufacture metal products, by R. N. Dumble, 1110 Mistletoe drive.

Wisconsin

LAKE MILLS—W. G. Kirchhoffer, Madison, Wis., consulting engineer, is preparing plans for a municipal sewage system recently ordered by the state board of health. Council has appropriated $22,000 for the first unit.

MILWAUKEE—Bids will be taken soon for construction of a boiler house 26 x 40 feet at the Brown street school, by the board of education, part of a $50,000 improvement plan which includes steel fire escapes.

WATERTOWN—Chandelier Art Metal Co., 200 First street, has been incorporated to manufacture lighting fixtures, grille and art metal work, by H. W. Vore and F. Ehrensperger.

South Dakota

RAPID CITY—J. D. Evans Equipment Co. has been incorporated with $50,000 capital to construct machinery, by J. D. Evans and associates.

Pacific Coast

LOS ANGELES—Neu-Bart Stamping & Mfg. Co., care Koenig & Brunton, 303 Lane Mortgage building, representatives, has been incorporated to manufacture metal stampings and similar products by A. H. Neubauer and G. Bartholomew.

SALEM, OREG.—State highway commission will open bids July 20 for the Juniper canyon bridge, requiring 41 tons of reinforcing steel.

Dominion of Canada

VANCOUVER, B. C.—Adkinson & Dill Ltd., 319 West Pender street, will build the carbonizing unit for the gas plant development of the British Columbia Electric Power & Gas Co. on False creek. Contract for some of the buildings has been given Harvie & Simmonds Ltd., 500 Beattie street. Coal handling wharf, bunkers and gantry crane contracts have not been awarded. Carbonizing plant will include chamber house, producer house, machine room and an 87-foot tower, of steel, concrete and brick.

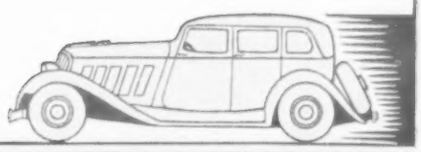
TORONTO, ONT.—Canadian Fitzgerald Ltd. has been incorporated with $40,000 capital to manufacture electrical equipment and devices, by Patrick J. Fitzgerald, Torrington, Conn.

STAMPINGS

These wheels are made from two formed cups electric welded together for use in connection with the new type low pressure tires.

Our plant is equipped to produce stampings of all descriptions. Consult us on your stamping problems.

FALLS STAMPING CO.
Cuyahoga Falls, Ohio



Accuracy-Economy

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
⅛	58	44½	⅛	25	7
¼	62	50½	¼	30	13
1—3	64	52½	1—1¼	33	17
			1½—2	37	20

LAP WELD

2	57	45½	2	25	11
2½—6	61	49½	2½—3½	30	15
7—8	58	45½	4—6	32	19
9—10	56	43½	7—8	31	18
11—12	55	42½	9—12	28	13

BUTT WELD

Extra strong, plain ends

⅛	55	44½	¼ & ⅜	+11	+46
¾	60	49½	½	25	9
1—1½	62	51½	¾	30	14
2—3	63	52½	1—2	36	20

LAP WELD

Extra strong, plain ends

2	55	44½	2	31	15
2½—4	59	48½	2½—4	36	22
4½—6	58	47½	4½—6	35	21
7—8	54	41½	7—8	33	19
9—10	47	34½	9—12	23	10
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$32.00 to 33.00
Four-inch, Birmingham	36.00 to 37.00
Four-inch, Chicago	38.40 to 42.40
Six to 24-inch, Chicago	34.40 to 38.40
Six-inch and over, N. Y.	26.00 to 28.00
Four-inch, New York	32.50 to 34.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los. Ang.	3.30c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	3.00c
San Fran.	3.25c
Seattle	3.00c
St. Louis	3.00c
St. Paul	2.85c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los. Ang. cl.	2.10c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.50c
San Fran. lcl	2.80c
Seattle	3.00c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.30c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.00c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.00c
San Fran.	3.25c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.45c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.60c
N. Y.	3.00c
Portland	4.00c
Phila.*† (e)	2.90c
Pitts.**	3.00c
San Fran.	3.50c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.20c
New York	3.75c-4.00c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.05c
Seattle	4.50c
St. Louis	3.80c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.05c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	3.75c
Houston	4.25c
Los. Ang.	4.50c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	5.00c
San. Fran.	4.55c
Seattle	5.00c
St. Louis	4.35c
St. Paul	4.19c
Tulsa	5.10c

***BANDS**

Baltimore	3.25c
Boston	3.75c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	3.80c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.65c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c

***HOOPS**

Baltimore	3.25c
Boston	3.75c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.00c
Det. No. 14 & lighter	3.30c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St Paul	3.75c

*New extras apply.

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.60c
Buffalo	2.95c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang. (a)	4.25c
New York	3.39c
Philadelphia*	3.35c
Pittsburgh	2.95c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.20c
St. Louis	3.36c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex, only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	3.95c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

New Trade Publications

X-RAY—Claud S. Gordon Co., Chicago, has published a folder discussing the application of the X-ray to inspection of welds.

ELECTRIC RESISTANCE — Thomson-Gibb Electric Welding Co., Lynn, Mass., has issued a leaflet for its catalog on direct application of heat by electric resistance in welding.

OIL BURNERS—Schutte & Koerting Co., Philadelphia, in a current bulletin presents its mechanical fuel oil burning systems, with illustrations and detail drawings.

STEEL CASTINGS—"The Effect of Design on the Making of Steel Castings" is the title of a folder recently published by the Detroit Steel Casting Co., Detroit.

BOILER EQUIPMENT — Northern Equipment Co., Erie, Pa., in two current bulletins covers equipment for steam boilers. No. 127 illustrates and describes a feed water regulator; No. 129 covers a new type of governor.

CAST IRON—Whiting Foundry Corp., Harvey, Ill., has started publication of *The Whiting Founder*, devoted to problems of the gray iron foundry. It will be issued at intervals of three months, the current issue being spring, 1932.

CAST STEEL—West Steel Casting Co., 805 East Seventieth street, Cleveland, has issued a bulletin on the advantages of steel castings from its foundry for strength, economy and durability.

SHEET PILING—Inland Steel Co., Chicago, in bulletin No. 1 gives engineering data on Inland sections, tees, corners, crosses and splices in steel sheet piling. It is illustrated by diagrams and halftones.

BELT DRIVE—Worthington Pump & Machinery Corp., Harrison, N. J. has prepared a booklet discussing its V-belts running in V-grooved sheaves for power transmission. Reproductions of photographs show the use of the belts in various installations.

BLOWERS — Roots-Connersville-Wilbraham, Connersville, Ind., has issued bulletin No. 40-B10 on its rotary displacement meters, including installation views, a table of ratings and cross-sectional diagrams; No. 170-B10 covers centrifugal blowers and compressors.

INDUCTION MOTOR—A bulletin by the Lincoln Electric Co., Cleveland, is devoted to its type E totally-enclosed, fan-cooled induction motor, of stainless steel. It illustrates and describes construction details and gives technical data.

JET CONDENSERS—Bulletin No. 411 of the Pennsylvania Pump & Compressor Co., Easton, Pa., describes its jet condensers and auxiliaries for vacuum processes. These products will be marketed by the Byer Engineering Associates, 75 West street, New York.

NEW ORLEANS—The association of commerce of New Orleans is distributing its 1932 Red Book, containing a buyers' guide and membership directory, with much information as to the facilities of the city for commerce and manufacturing.

TOOL ROOMS—City Machine & Tool Works, Dayton, O., is distributing a folder calling attention to its facilities for toolroom work for manufacturers, saving the latter large investment in equipment for this purpose at their plants.

WELDING EQUIPMENT — Bastian-Blessing Co., Chicago, has issued a catalog containing information on a line of welding equipment, including welding rods, electrodes, cast-iron welding rods, tobin bronze, fluxes, torches, generators and accessories.

COMPRESSORS—Feather valve vertical two-stage air compressors are described in a recent bulletin of the Worthington Pump & Machinery Corp., Harrison, N. J. Contents include specifications, dimensions and a sectional drawing showing method of construction and operation.

FLOOR STEEL—Acme Steel Co., 2840 Archer avenue, Chicago, has published a bulletin illustrating and describing a floor grid which is imbedded flush with the top in concrete and mastic floors to bear the weight, absorb shocks and provide a non-skid surface. Methods of resurfacing wornout floors are described.

CIRCUIT BREAKERS—Roller-Smith Co., 233 Broadway, New York, in catalog No. 5 discusses standard, industrial and enclosed type air circuit breakers for direct and alternating currents. Numerous technical data on the various types of breakers and attachments are included.

STEEL PLATE—By-Products Steel Corp., Broad Street Station building, Philadelphia, works at Coatesville, Pa., has issued a bulletin on its steel plate blanks and detail plates, cut to shape, sheared, blanked or gas cut and pressed and formed. Service on blank and shape problems is featured.

SUPERVISORY CONTROL — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., in its circular No. C 1948 presents its new Polaricode split-second supervisory control. This system employs a simplified scheme of operation by which operating circuits can be set up in less than a second.

TEMPERATURE MEASUREMENT —Leeds & Northrup Co., Philadelphia, has issued a revised edition of its bulletin No. 871 on temperature measurements in generators, transformers and cable systems. It is well illustrated and full data on the various types of instruments are included.

CIRCUIT BREAKERS—A new group of circuit breakers based on the De-Ion principle of arc extinction for the replacement of open knife switches and air circuit breakers is announced in two publications of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The publication presents data on the construction, operation and the general features of the circuit breakers.

FORGE SHOP FURNACES

DESIGNED TO MEET MODERN CONDITIONS

Today's lower prices, keener competition and the increasing demand for quality, necessitate more efficient methods and equipment. These illustrations show several forge shop furnaces which are meeting modern conditions by—

Reducing Fuel Cost.
Reducing Labor Cost.
Increasing production.
Improving working conditions.
Producing more uniform results by accurate temperature and atmospheric control.

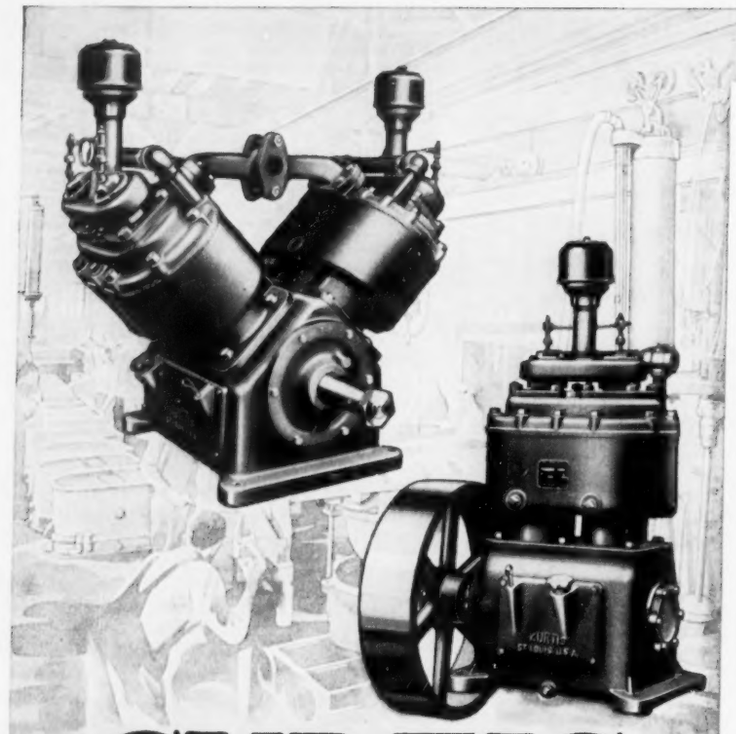
With both Electric and Fuel Divisions, we offer a complete heating and heat treating furnace building service to the industry.

OIL, GAS or ELECTRIC

Some unusual economies are to be effected today through proper heating and material handling equipment. A careful survey may reveal possibilities for savings which will surprise you—either through new equipment or the rebuilding of present equipment. Without obligation, we will be glad to make such a survey at your convenience.

THE ELECTRIC FURNACE CO.
Oil, Gas and Electric — SALEM, OHIO. — Kilns and Furnaces

We Build the Furnace to Fit the Job.



CURTIS
MODEL "C" COMPRESSORS

Curtis
Solves a big Problem of Compressor Operation

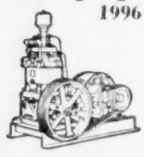
in perfecting practically carbon-free valves. New type head with short intake passages, oversize ports and straight line air flow—brings air into cylinder at lowest possible temperature, with resulting peak pressure and temperature of compression so low that there is practically no evaporation of oil on piston and cylinder walls.

Cooled air intake also greatly increases capacity of compressor.

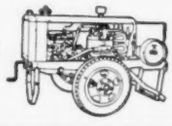
Carbon-Free Valves!
Timken Bearings! — Centro Ring Oiling!

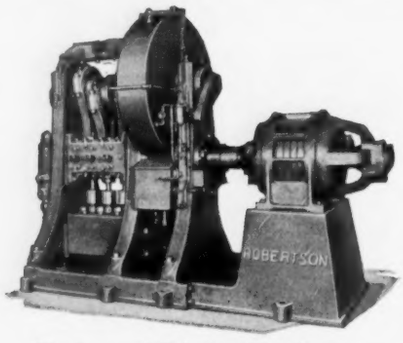
Timken bearings assure longer life with easy adjustment. Centro-ring oiling provides controlled lubrication.

Entire design increases capacity in relation to size so that prices are relatively lower. Write for illustrated folder giving full details. Curtis Pneumatic Mchy. Co., 1996 Kienlen Ave., St. Louis, Mo.



2 and 4 Cylinder
Made in V-Belt and Direct Drive, Stationary and Portable Types





The Improved Robertson High Pressure Hydraulic Pump

"16 Features"

You buy an hydraulic Pump. It isn't like buying something that is built to wear out quickly so that you will buy another—like a motor car, for instance.

No. You buy an hydraulic pump for endurance and troublefree operation for many, many years. The Robertson new and improved hydraulic pump is just such a pump. Built by the makers of Robertson lead-encasing machinery, this pump is designed to cost you much less in the long, long run . . . 16 separate features make it a matchless machine for a hard job! Learn about these features in the Pump Folder and compare. WRITE FOR THIS FOLDER!

John ROBERTSON CO. INC. *Pioneers-Since 1858*
123-131 Water Street Brooklyn, N. Y.

PHOENIX METAL ROLLS
PHOENIX STEEL ROLLS
PHOENIX CHILL ROLLS
PHOENIX SAND ROLLS

PITTSBURGH ROLLS CORPORATION
PITTSBURGH, PA.